SPECTRUM Enterprise Manager

Device Management

SmartSwitch ™ 9000/9500 Series Management Module Guide

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Contents

SMARTSWITCH 9000/9500 SERIES

Overview 7
Module Descriptions 9
ATM Access Modules 9
Ethernet MicroLAN Switch Modules 9
Ethernet SmartSwitch INB Modules 10
Ethernet SmartSwitch INB 2 Modules 10
Fast Ethernet INB Modules 11
FDDI SmartSwitch Modules 11
FDDI Switch Module 12
FDDI MicroLAN Modules 12
FDDI Repeater Modules 12
Gigabit Ethernet SmartSwitch Modules 12
TR MicroLAN Switch Modules 13
Token Ring SmartSwitch Module 13
SmartCell Switches 14
Carrier Module 14

SPECTRUM MODEL TYPES

VIEWS FOR THE DEVICE ICON

Application View 19
Configuration Views 20
Container View 20
Module View 21
Device Views 22
Environmental Module Information 23
Backplane Status 25
Chassis Device View 26
Backplane Device View 27
Environmental Device View 28
Chassis Environmental Information 28
Physical Device View 30
Interface Device View 31
Device Topology View 32
Model Information View 33
Performance View 33
SPECTRUM View Access 34

MANAGEMENT TASKS

Monitor Interface or Port Operation 35
Upgrade Firmware for the Device 35
Enable (ON) or Disable (OFF) a Port 35
Setting Repeater Traps and Alarms 35
Setting Ring Alarms and Thresholds 35
Setting Token Ring Security 35
Modeling a SmartSwitch 9000 35

ICONS

Chassis Module Icon 36
Module Identification Labels 36
Interface Labels 36

Chassis Module Icon Subviews Menu Selections 41
Application Label Icon Subviews Menu Selections ...42
Interface Label Icon Subviews Menu Selections 42
Repeater Labels.....42
FDDI Ring Label 43
FDDI Ring Label Icon Subviews Menu Selections 43
FDDI Port Labels 43
FDDI Port Label Icon Subviews Menu Selections 44
Token Ring Label.....44
Token Ring Label Icon Subviews Menu Selections...45
Ring Speed Label 45
Token Ring Port Labels 45
RingIn/Ring Out and Ring Status Labels 46
Token Ring Port Icon Subviews Menu Selections.....46
Backplane Module Icon.....46
Module Identification Labels 47
SMB 1 and SMB 10 Icons.....47
FNB 1 and FNB 2 Icons 49
INB 1 and INB 2 Icons 49
Interface Icon 50
Interface Icon Subviews Menu Selections.....52
Application Icon.....53

ICON SUBVIEWS

Device Configuration View..... 56
Interface Configuration Table 56
Port Configuration - CSIIf Port View 57
FddiMAC Device Configuration View..... 58
Station Configuration..... 58
SMT Information..... 59
FDDI Port Configuration View..... 62
Port Management..... 62
Repeater Configuration View 64
Repeater Management..... 64
Source Address Management..... 65
Trap Configuration..... 65
Alarm Configuration..... 66
Error Source 67
Fddi Station List View 68
FDDI Stats View..... 69
ATM Client Application Configuration View 70
Configuration Table 70
ATM Interface Detail View 72
Token Ring Configuration View 73
Port Configuration 74
Host Configuration..... 74
TR Ring Configuration View..... 76
Ring Configuration..... 76
Ring Alarm/Threshold/State 77
Token Ring Security Configuration View 78
Allowed Station Address Table 79
Token Ring Station Table View..... 80

Token Ring Station Isolating Errors View 82
Token Ring Station Non-Isolating Errors View..... 85
Token Ring Station Alarm Thresholds View 87
Token Ring Station Detail View 90
Pie Charts..... 91
Station Alarms Dialog Box 92
Modifying Threshold Settings 94
Reading Thresholds from a Station.....94
Modify Allowed Station List View 95
Security Administration State 95
Changing the Ring Security State 98
Adding Stations 98
SFCS System Configuration View 99
SFCS System Status View 101
SFCS System System Configuration View 102
SFCS Module Configuration Table View 103
SFCS Module StatusTable View..... 105
Module UPC Table View..... 106
Statistics Engine Table View..... 107
ANIM Configuration Table View..... 108
ANIM Status Table View 109
Interface Configuration Table View..... 110
Interface Statistics Table View..... 111
Connection Configuration Table View..... 112
Connection Statistics Table 114
Queue Configuration Table View..... 116
Queue Statistics Table View..... 117
CTM Interface Configuration Table View..... 118
CTM Interface Statistics Table View..... 119
CTM Queue Configuration Table View 120
CTM Queue Statistics Table View 121
BW Manager NIM Information Table View..... 122
BW Manager Port Information Table View..... 123
BW Manager Port Pool Limits Table View..... 124
BW Manager Port Pool Statistics Table View..... 126
BW Manager Port Pool Trap Management Table View 127

MODELING CONSIDERATIONS

Example of a Modeled Network Topology View 128

MANUAL MODELING

Summary.....129
Preparation and Topology View Definitions.....129
Modeling the Chassis.....130

Placing the Chassis Location Icon in the Location View 132
Modeling the Modules in the Chassis.....133
Quick Steps 133
Modeling the Flexible Network Bus (FNB) 134
Modeling the Modules Connected to the INB 134
Modeling the Modules Connected to the FNB 134
Building the FNB Ring in the FDDI LAN Topology View136

INDEX

SmartSwitch 9000/9500 Series

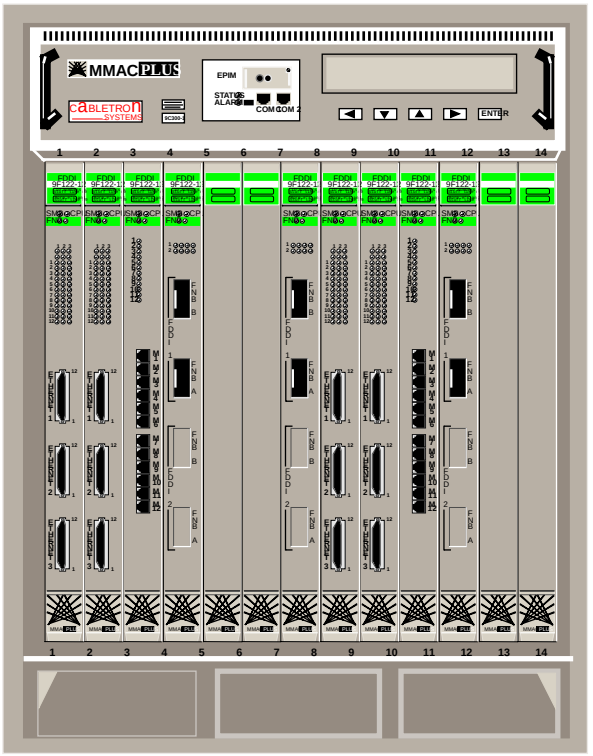
This section describes the Chassis and Modules that makeup the SmartSwitch 9000/9500 Series.

Overview

The SmartSwitch 9000/9500 (Figure 1) consists of a chassis that can support up to 14 modules, an Evironmental module, a Flexible Network Bus, a high speed Internal Network Bus, and over 30 different types of modules. The Smartswitch 9500 is the same as the 9000 with the exception that it requires a CTM upgrade kit in order to make use of the 9A656-04 module. Depending on the modules installed, the SmartSwitch 9000 will support the following technologies:

- Ethernet
- Fast Ethernet
- Gigabit Ethernet
- Token Ring
- FDDI
- ATM

Figure 1: SmartSwitch 9000/9500



The SmartSwitch 9000 utilizes a packet- and cell-switching backplane to transfer information throughout your network. Figure 2 shows a representation of the relationship between the front panel interfaces and the backplane for each module installed in the SmartSwitch 9000 chassis.

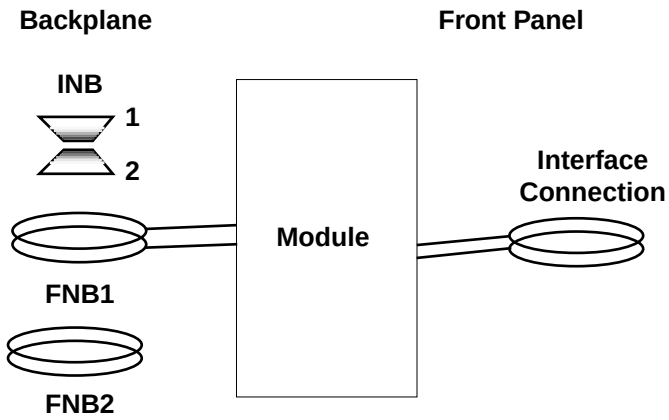
The components that make up the backplane are:

- The Flexible Network Bus (FNB) consisting of two dual FDDI networks; the FNB1 and the FNB2
- The Internal Network Bus (INB) which is divided into two channels; INB1 and INB2

Note:

Througout this manual the Smartswitch 9000/9500 Series will be referred to as the SmartSwitch 9000.

Figure 2: Front Panel/Backplane Relationship



Connection Between FNB1 and the Front Panel

Module Descriptions

The following modules are available for the SmartSwitch 9000 Series:

ATM Access Modules

An ATM Access module is a device that is capable of providing connectivity between FDDI or ATM networks and the INB and the FNB or both. The ATM Access Module 9A128_01 connects an external ATM network to one of the two FDDI networks on the Flexible Network Bus (FNB) backplane. The ATM Access Module 9A426_02 connects two external ATM networks to either the Internal Network Bus (INB) backplane, the FNB backplane or both. The ATM Access Module 9A426_01 connects one external ATM network to either the INB backplane or the FNB backplane.

Ethernet MicroLAN Switch Modules

The Ethernet MicroLAN Switch Module is a four channel Ethernet to FDDI bridge. Up to three front panel Ethernet networks can be connected to this module. These networks can be bridged to any other Ethernet or FDDI segment, and to any other MMAC-Plus card via the FNB bus. The Ethernet MicroLAN device is equipped with an advanced Intel i960 microprocessor. This microprocessor provides a platform for all management functions within a scalable RISC-based architecture. Three 50-pin front panel ports provide 12 individual Ethernet connections each. All ports function as repeaters for incoming data which retime and retransmit all packets. Bridging between the front panel channels and/or to any other module in the chassis is done via FDDI ring 1 or FDDI ring 2 of the FNB bus. The following devices are the Ethernet MicroLAN Modules supported:

- 9E132_15 MicroLAN Switch Extension Module
- 9E133_36 36-port Ethernet MicroLAN
- 9E138_12 12-port Ethernet MicroLAN (fiber optic)
- 9E138_36 36-port Ethernet MicroLAN (fiber optic)

Ethernet SmartSwitch INB Modules

The Ethernet SmartSwitch INB Modules are 24-port and 36-port Ethernet switching modules that provide 24 or 36 Ethernet networks with connectivity to the SmartSwitch 9000 Internal Network Bus (INB 2). They feature 24 or 36 10Base-T front panel ports supported by RJ-71 style connectors. The following devices are the Ethernet SmartSwitch INB Modules supported:

- 9E423_24 (Ethernet SmartSwitch INB Module)
- 9E423_36 (Ethernet SmartSwitch INB Module)

Ethernet SmartSwitch INB 2 Modules

The Ethernet SmartSwitch INB 2 Modules are 12-port and 36-port Ethernet switching modules that provide 12 or 36 Ethernet networks with connectivity to the SmartSwitch 9000 Internal Network Bus (INB 2). They feature 12 or 36 10Base-T front panel ports supported by ST connectors. The following devices are the Ethernet SmartSwitch INB Modules supported:

- 9E428_12 (Ethernet SmartSwitch INB 2 Module)
- 9E428_36 (Ethernet SmartSwitch INB 2 Module)
- 9E429_12 (Ethernet SmartSwitch INB 2 Module)
- 9E429_36 (Ethernet SmartSwitch INB 2 Module)

Fast Ethernet INB Modules

Fast Ethernet INB (Internal Network Bus) Modules for are Fast Ethernet switching modules providing Ethernet networks with connectivity to the SmartSwitch 9000's Internal Network Bus (INB2).

These modules occupy a single slot in the chassis.

You may model the Fast Ethernet INB Module at the Topology level, or as part of a LAN. One device may be attached to each of the Fast Ethernet INB Module's interfaces.

- The 9H421_12 module has 12 fixed MMF (Multimode Fiber) SC front panel connections with connection to the INB2 backplane.
- The 9H422-12 module provides 11 fixed RJ-45 connections for category 5 twisted pair, and one media-flexible interface to accept either an additional RJ-45 or a Multimode fiber or single-mode fiber SC interface via the Fast Ethernet Port Interface Module
- The 9H423_26 is a Fast Ethernet module with INB-2 connectivity. It Consists of 24 ports via 2 RJ21 Connectors, and 2 ports via 2 MMF SC Connectors.
- The 9H423_28 is a single module offering connectivity for 24 switched Ethernet segments and up to four switched Fast Ethernet connections. It supports media flexibility for both Fiber Optic Fast Ethernet backbone and Twisted Pair server/workstation connections.
- The 9H429-12 features 12 fixed single mode front panel interfaces and provides connectivity to the INB 2 backplane.

FDDI SmartSwitch Modules

The FDDI SmartSwitch Module (9F426 -02 and 9F426-03) connects two external FDDI networks to a high speed switching backplane, the Internal Network Bus (INB). The external FDDI networks connect to the FDDI SmartSwitch Module using standard FDDI Dual Attached Station (DAS) A/B ports.

The FDDI SmartSwitch Modules operate in two modes: as Bridging or as a SecureFast Switch (SFS). The FDDI SmartSwitch Modules are able to accept variable-size LAN packets, translate them into a generic form for transmission to other front panel ports, and segment them into fixed length data blocks for time division multiplexed transmission over the INB backplane to other Fast Packet Switched based modules.

FDDI Switch Module

The FDDI Switch Module (9F116-01) is a two-port FDDI bridge used to connect an external FDDI network with one of the two FDDI networks, Flexible Network Bus (FNB) 1 or FNB 2; or to connect between FNB 1 and FNB 2 on the FNB backplane. The external FDDI network connects to the FDDI Switch Module using a Dual Attached Station (DAS) interface via standard FDDI Medium Interface Connectors (MIC) on the front panel.

FDDI MicroLAN Modules

The FDDI MicroLAN Modules are a family of concentrators providing eight or twelve master ports for connections to a Single or Dual Attached Station. Modules attach directly to the SmartSwitch 9000 Flexible Network Bus (FNB).

The 9F120_08 is an eight-port FDDI dual channel concentrator via MMF MIC with dual FNB attachments. The 9F122_12 is a twelve-port FDDI dual channel concentrator via UTP RJ-45 with dual FNB attachments. The 9F125_08 is an eight-port FDDI dual channel concentrator via SMF MIC with dual FNB attachments. The 9F241_12 is a twelve-port FDDI dual channel concentrator via MMF SC with FDDI bandwith statistics and dual FNB attachments with dual MAC.

FDDI Repeater Modules

The FDDI Repeater Module (9F106-02 and 9F206-02) is an enhanced FDDI repeater module providing access to the Flexible Network Bus (FNB) backplane. The front-panel connections are provided via two sets of FDDI A/B ports, allowing the FNB to transverse multiple SmartSwitch 9000 hubs, or connect to any ANSI FDDI-compliant device in an FDDI network.

Gigabit Ethernet SmartSwitch Modules

The Gigabit Ethernet SmartSwitch Modules (9G426-02, 9G421-02, and 9G429-02) are single slot devices that connect to the INB backplane to integrate connectivity to ATM, FDDI, and Fast Ethernet. They feature traditional switching services as well as Cabletron's SecureFast Virtual Networking, embedded Virtual Routing, optional RMON support, and Broadcast Storm Protection on every port. The devices provide two front panel slots that can accommodate full duplex SC connectors offering MMF and SMF connection options. The 9G421-02 and 9G429-02 devices support the IEEE draft 802.3 specification for Gigabit Ethernet.

TR MicroLAN Switch Modules

The 9T122-08 and 9T122-24 TR MicroLAN Switch Modules provide connectivity to two Token Ring networks through the Fiber Distributed Data Interface (FDDI) backplane in the chassis. The TR MicroLAN Switch Module's single 24-port Token Ring, or two 12-port Token Rings use standard RJ-45 connectors supporting either Unshielded Twisted Pair (UTP) or Shielded Twisted Pair (STP) lobe wiring. The rings interconnect across the chassis's Flexible Network Bus (FNB), a dual 100 Mbps FDDI backplane, and can be configured for FNB-1 or FNB-2.

The 9T125-08 and 9T125-24 TR MicroLAN Switch Modules provide connectivity to two Token Ring networks. The rings interconnect across the chassis's Flexible Network Bus (FNB), a dual 100 Mbps FDDI backplane, and can be configured for FNB-1 or FNB-2.

Token Ring SmartSwitch Module

Designed specifically for collapsed Token Ring backbones, the 9T425-16 Token Ring SmartSwitch occupies two slots in the chassis. It is equipped with 16 copper RJ-45 dedicated Token Ring (DTR) lobe/station ports, also known as concentrator or C-ports. The module is considered a "hard card," with all switching functions performed by the Fast Packet Switch (FPS Application Specific Integrated Circuits ASICs). The Token Ring SmartSwitch Module attaches to the Internal Network Bus (INB) 2 backplane and has System Management Bus -1 (SMB-1) and SMB-10 connections for system management.

SmartCell Switches

The 9A656-04 SmartCell switch module is a single-slot, hot-swappable modules for the SmartSwitch 9000. Each module provides 4.5 Gbps of ATM Switching fabric with 64K cell output buffers that provide priority queuing and the ability to communicate with other SmartSwitch 9A656-04 modules via a unique Cell Transfer Matrix (CTM) backplane.

Note:

A CTM upgrade kit is required for use with the 9A656-04 modules.

Each switch module holds up to four ATM Network Interface Modules (ANIMs). There are several different ANIMs available for these modules that provide interfaces ranging from 45 Mbps up to 622 Mbps. ANIM options include DS-3/E-3 over coaxial cable, OC-3 over unshielded twisted pair, multi and single mode fiber, OC-12 over multi and single mode fiber, and OC-48 over single mode fiber.This interface flexibility permits scaling to even higher speeds in the future. All physical interfaces--DS3, OC-3, and OC-12 and higher--support UNI and PNNI as well as all relevant ATM standards.

Carrier Module

The 9M426-02 Carrier Module for the SmartSwitch 9000 combines voice, video, and data. Such diverse technologies as Frame Relay and Gigabit Ethernet are integrated into the same switching chassis, exemplifying the ideals of an advanced backbone switching system.

Occupying two slots in the SmartSwitch 9000 chassis and equipped with two modular interfaces, each capable of supporting a wide variety of flexible LAN, WAN or ATM options, and is specifically designed for high-speed, feature-rich translational switching in the data center. Using the HSIM architecture, select LAN/WAN technologies can now be fully integrated within the SmartSwitch 9000.

SPECTRUM Model Types

This sections desctribes the Model Types used by SPECTRUM to manage and monitor the device.

Table 1 lists the Model Types representing the SmartSwitch 9000 Series devices and dysplays the Device icons used to represent each.

Table 1: SPECTRUM Model Types

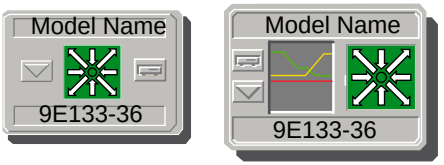
Device	Model Type	Example Device Icon
9E132-15 MicroLAN Switch Extension Module	9E132-15	
9E133-36 MicroLAN Switch Module - TP	9E133-36	
9E138-12/36 MicroLAN Switch Module - Fiber	9E138-12/36	

Table 1: SPECTRUM Model Types (Continued)

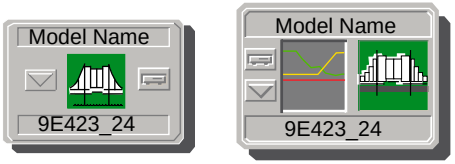
Device	Model Type	Example Device Icon
9E423-36 Ethernet SmartSwitch Module	9E423-36	
9E428-12/30 Ethernet SmartSwitch Module	9E428-12/30	
9E429-12/36 Ethernet SmartSwitch Module	9E428-12/36	
9H423-28 SmartSwitch 10/100 Module	9H423-28	
9H421-12 Fast Ethernet SmartSwitch Module	9H421-12	
9H422-12 Fast Ethernet SmartSwitch Module	9H422-12	
9H429-12 Fast Ethernet SmartSwitch Module	9H429-12	
9H423-26 SmartSwitch 10/100 Module	9H423-26	
9G421-02 Gigabit Ethernet SmartSwitch Module	9G421-02	
9M426-02 Carrier Module	9M426-02	

Table 1: SPECTRUM Model Types (Continued)

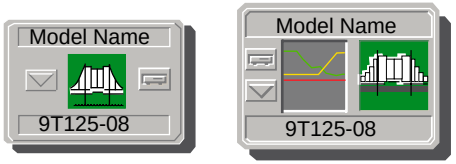
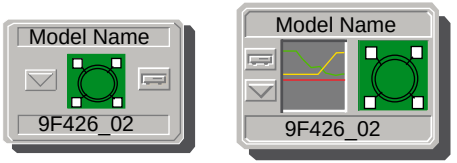
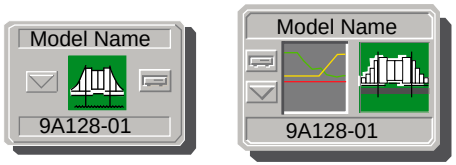
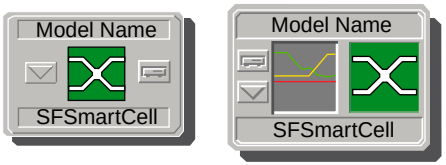
Device	Model Type	Example Device Icon
9T122-08 MicroLAN Switch Extension Module	9T122-08	
9T122-24 MicroLAN Switch Module	9T122-24	
9T125-08 MicroLAN Switch Module	9T125-08	
9T125-24 MicroLAN Switch Extension Module	9T125-24	
9T425-16 Token Ring SmartSwitch Module	9T425-16	
9F106-02 Repeater Module-External FNB	9F106-02	
9F116-01 FDDI Switch Module	9F116-01	
9F120-08 MicroLAN Concentrator	9F120-08	
9F125-08 MicroLAN Concentrator	9F125-08	
9F122-12 MicroLAN Concentrator	9F122-12	
9F206-02 Enhanced Repeater Module	9F206-02	
9F241-12 Concentrator Module-Dual Attatched	9F241-12	
9F426-02 FDDI SmartSwitch Module	9F426-02	
9F426-03 FDDI SmartSwitch Module	9F426-03	

Table 1: SPECTRUM Model Types (Continued)

Device	Model Type	Example Device Icon
9A000 Switch Module	9A000	
9A128-01 Access Module-FNB	9A128-01	
9A426-01 Access Module-FNB and INB	9A426-01	
9A426-02 Access Module-FNB and INB	9A426-02	
9A656-04 SmartCell Switch	9A656-04	

Views for the Device Icon

This section provides brief descriptions of the views that are accessible from the double-click zones and Icon Subviews menu for the Device Icon.

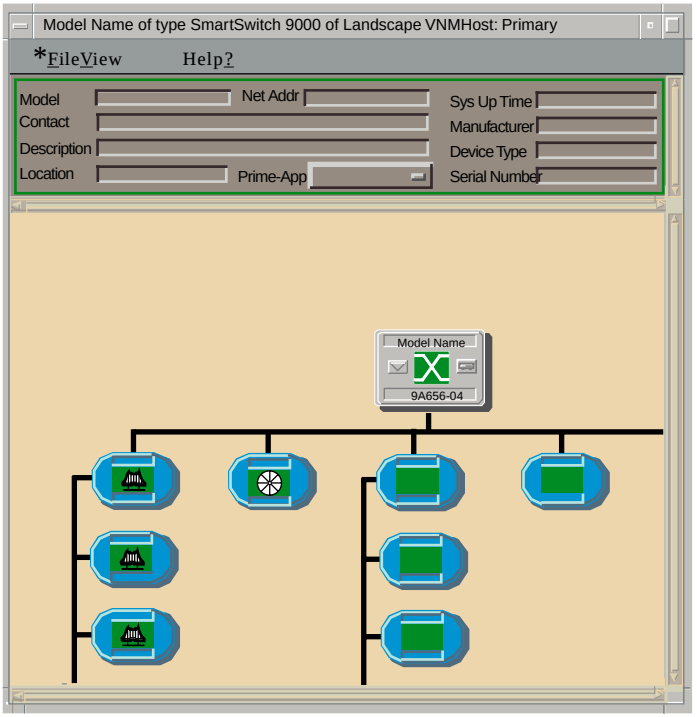
Application View

This view (Figure 3) displays icons that represent the applications supported by this device. Some of the applications are common to all or most devices and are described in the following Application documentation:

- *MIB-II Applications*
- *Bridging Applications*
- *Miscellaneous Applications*

An example of an application icon and a list of those applications supported by this device are described under Application Icon (page 53).

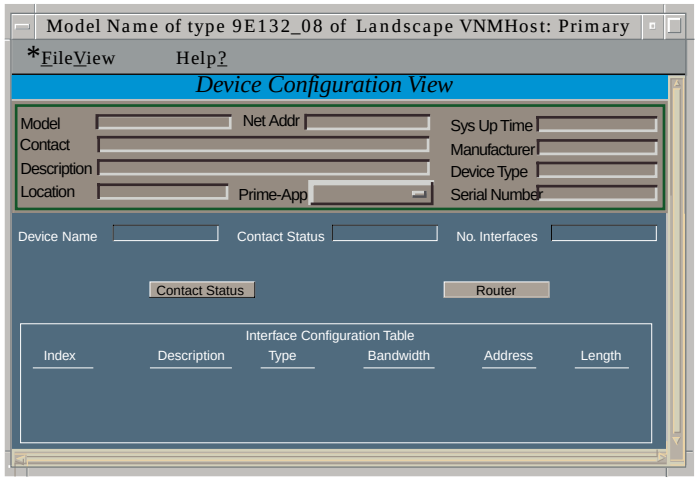
Figure 3: Example Application View



Configuration Views

These views (Figure 4) display configuration and operating information specific to this device. They are accessible from the Device icon in the case of the Device Configuration view, or from other icons used to represent the device, its ports or interfaces, and applications. These views and their location within SPECTRUM are described under Icon Subviews (page 55).

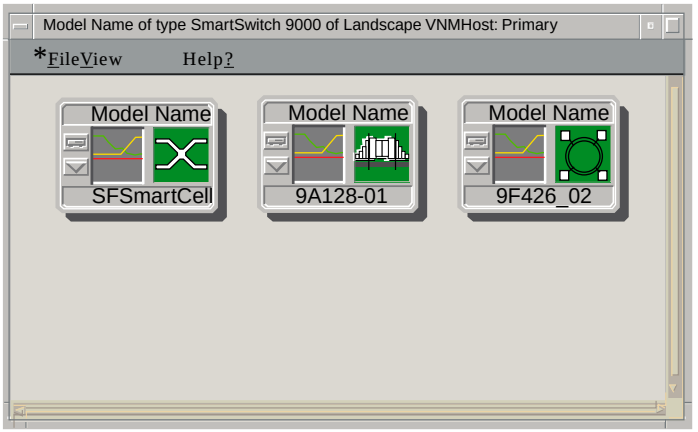
Figure 4: Example Configuration View



Container View

This view is accessible from the Chassis icon only. It displays Location view icons for each module installed in the SmartSwitch 9000 chassis. The views available from the Location view icons are described in this section. An example of a Container view is shown in Figure 5.

Figure 5: Example Container View

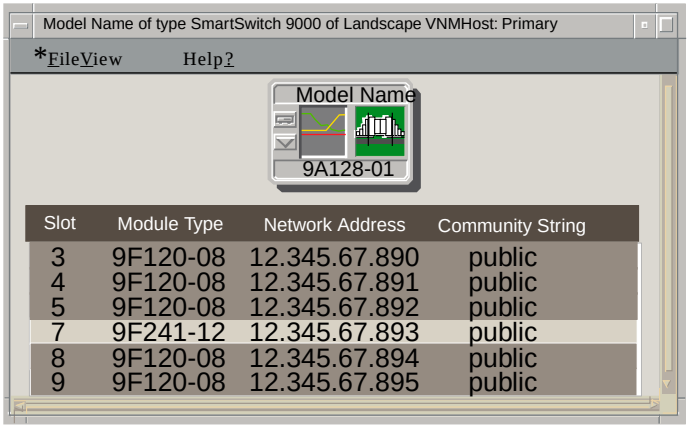


Module View

This view (Figure 6) is accessible from the Chassis icon only. It displays Location view icons for each module installed in the chassis. Rows list the slot, model type, network address, and community string.

- To display the Location view icon for a specific model listed in the Module view, double-click on that row.
- To search the list in the Module view for a specific Module Type, select Filter... or Search from the Tools menu.
- To determine the number of modules installed in the chassis, select Statistics from the Tools menu.

Figure 6: Example Module View



Device Views

These views display icons and labels that represent the device, its ports or interfaces, and applications. They are described under *SPECTRUM Views* within the Device Management documentation. This device supports five types of Device views:

- Chassis
- Backplane
- Environmental
- Physical
- Interface

The Chassis, Backplane, and Environmental Device views also display the following information:

- Environmental Module Information
- Backplane Status

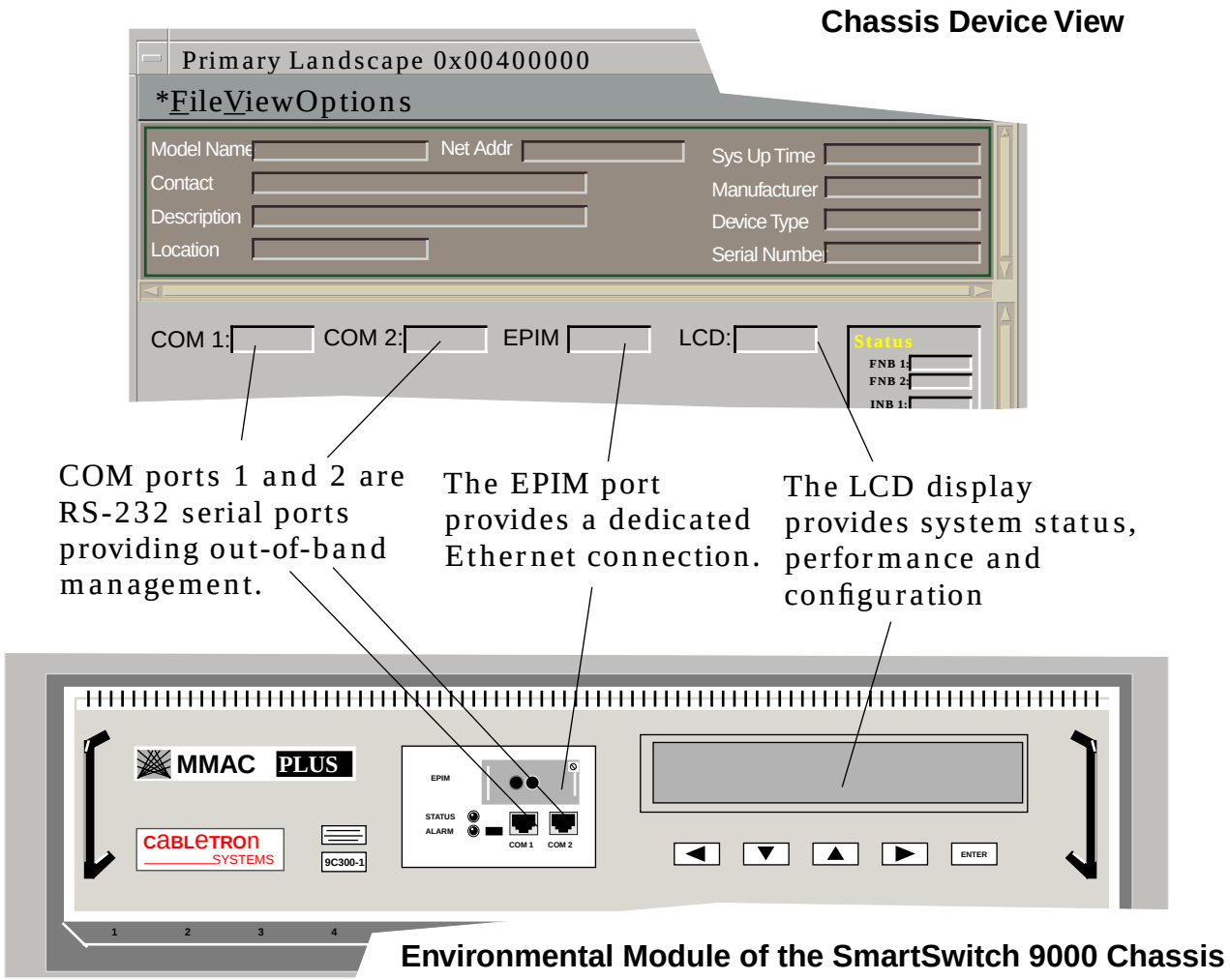
Environmental Module Information

The COM 1, COM 2, and the EPIM fields provide additional information for the connections on the Environmental Module. The LCD field provides information on the module performance. Figure 7 shows the relationship between the Device view and the corresponding front panel of the Environmental Module of the SmartSwitch 9000 chassis.

Note:

The four fields shown in Figure 7 do not function at this time. A future version of firmware will include this functionality.

Figure 7: Environmental Module



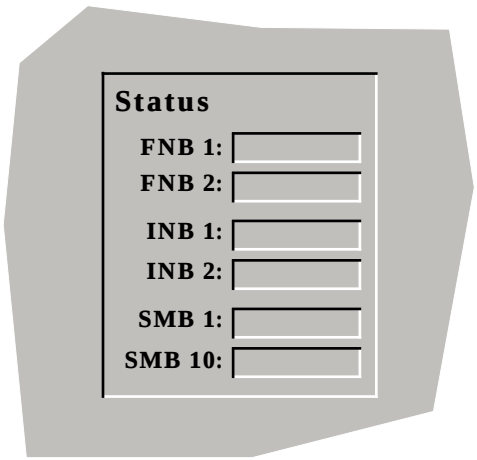
Environmental Module of the SmartSwitch 9000 Chassis

Backplane Status

This area of the Device view provides the status of the chassis backplane. Figure 8 shows the backplane status information fields as displayed in the Device view.

Note: **The fields described below do not function at this time. A future version of firmware will include this functionality.**

Figure 8: Backplane Status



FNB 1/FNB 2

The Flexible Network Bus (FNB) is one of the components of the chassis backplane. These fields provide the status of FNB 1 and 2 on the backplane.

INB 1/ INB 2

The Internal Network Bus (INB) is one of the components of the chassis backplane. These fields provide the status of INB 1 and 2 on the backplane.

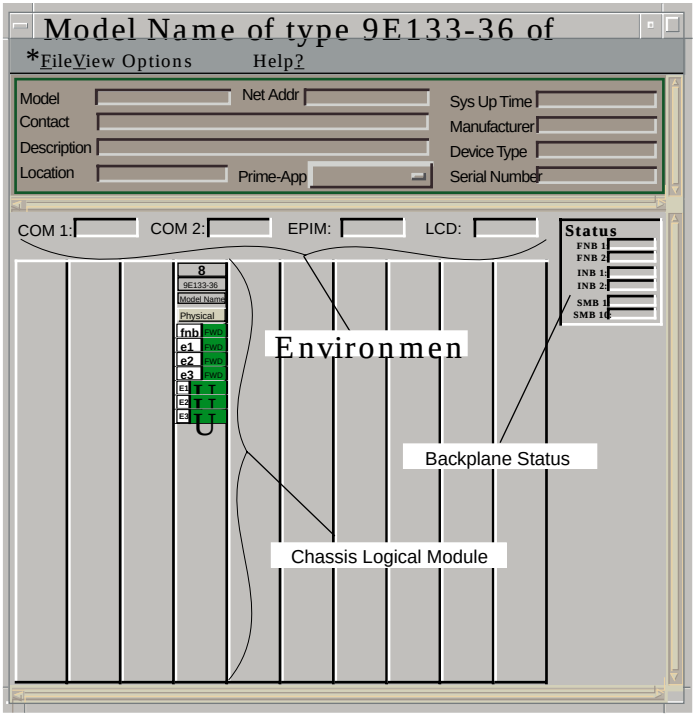
SMB 1/SMB 10

The System Management Bus (SMB) is one of the components of the chassis backplane. These fields provide the status of SMB 1 and 10 on the backplane.

Chassis Device View

This view (Figure 9) displays the Module Icon that represents the Physical Devices and their placement in the chassis. These icons are described under the Chassis Module Icon (page 36).

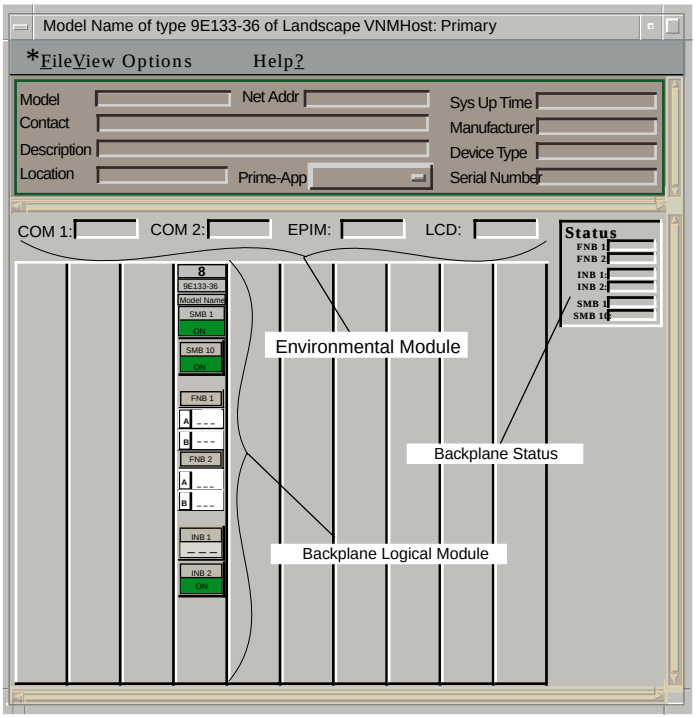
Figure 9: Example Chassis Device View



Backplane Device View

This view (Figure 10) shows a logical representation of the backplane connections (FNB, INB and SMB) for each of the modules installed in the chassis. To access this view, select View > Page > Backplane from one of the following Device views: Chassis, Environmental, or Physical.The icons, their double-click zones, and Icon Subviews menu selections are described under Backplane Module Icon (page 46).

Figure 10: Example Backplane Device View



Environmental Device View

This view displays the temperature in Fahrenheit or Celsius (selectable from the Options menu) and power levels for the devices installed in the chassis. Figure 11 shows an example of an Environmental Device view. To access the Environmental view, select View > Page > Environmental from one of the following Device views: Chassis, Backplane, or Physical.

Chassis Environmental Information

This area of the Device view also indicates the environmental status of the chassis. These panels and their fields are as follows:

Climate

- Temp - displays the ambient temperature of the room in which the chassis is located.
  - Green - normal, cool, or cold
  - Yellow - warm
  - Red - hot
  - Blue - unknown
- Humidity - displays the humidity value of the air flowing through the chassis.
  - Green - dry, normal, or moist
  - Blue - unknown

Fan Status/Speed

- F1 through F4 - display the fan speed in percent of maximum speed for each of the four fans in the chassis.
  - Green - normal, or testing
  - Yellow - unknown
  - Red - slow, inoperative, or off
- Auto/Full - allows you to set the fans to “Auto” (speed controlled by the temperature of the chassis) or “Full” (speed set to maximum).

Power Subsystem

- Total - displays the maximum power that could be supplied by the chassis power supply.
- Used - displays the total power currently being supplied by the chassis power supply.
- Avail - displays the available power from the chassis power supply.
- Status - displays the status and type of power for the chassis: AC, DC or Battery.
  - Green - power normal
  - Yellow - over current, over voltage, or under voltage
- Redundancy - displays the source of the power for the chassis.

  - Redundant - indicates that power from the secondary power source is being used for the chassis.
  - NON-Redundant - indicates that power from the primary power source is being used for the chassis.

- Main Pwr Bus - displays the voltage of the chassis' main power bus. The value can range between 40 and 60 volts DC.
  - Green - power normal
  - Yellow - over current, over voltage, or under voltage

- Diag Pwr Bus - field does not function at this time. A future version of firmware will include this functionality.

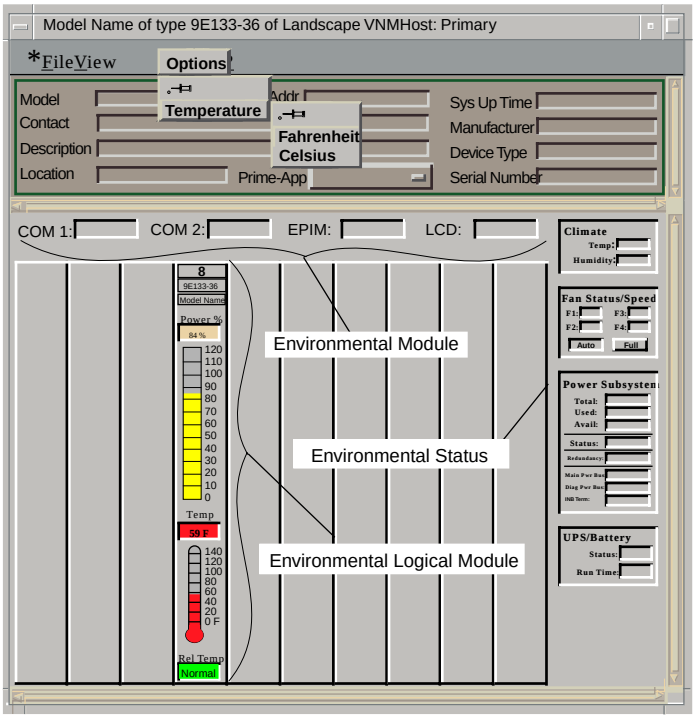
- INB Term - displays the voltage of the termination power bus. The termination power bus provides power to the INB termination cards within the chassis.
  - Green - power normal
  - Yellow - over current, over voltage, under voltage, or over power.

UPS/Battery

- Status - field does not function at this time. A future version of firmware will include this functionality.

- Run Time - field does not function at this time. A future version of firmware will include this functionality.

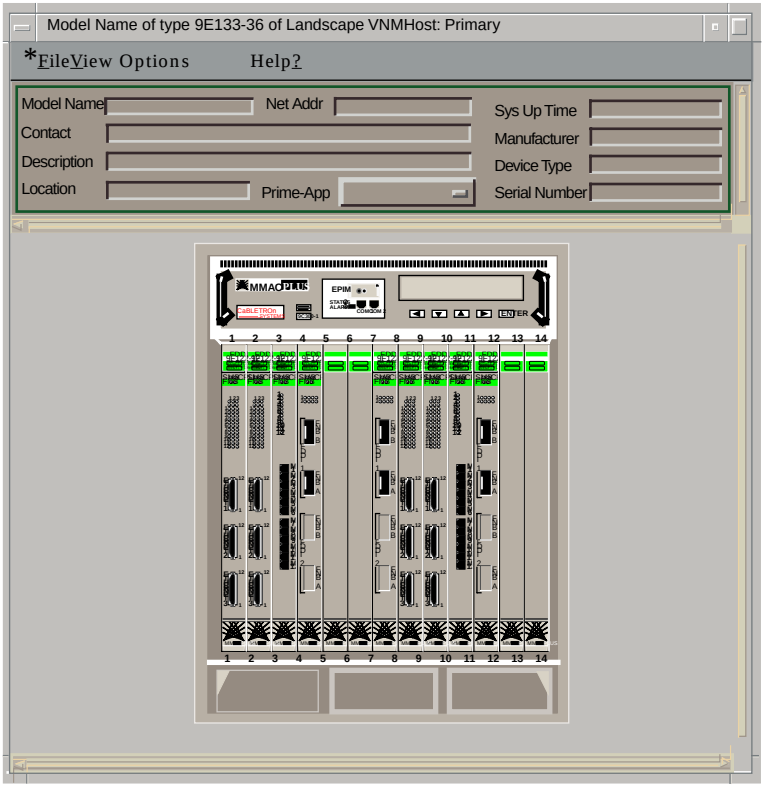
Figure 11: Example Environmental Device View



Physical Device View

This view (Figure 12) provides a static image of the chassis, ports, and modules installed in the chassis.

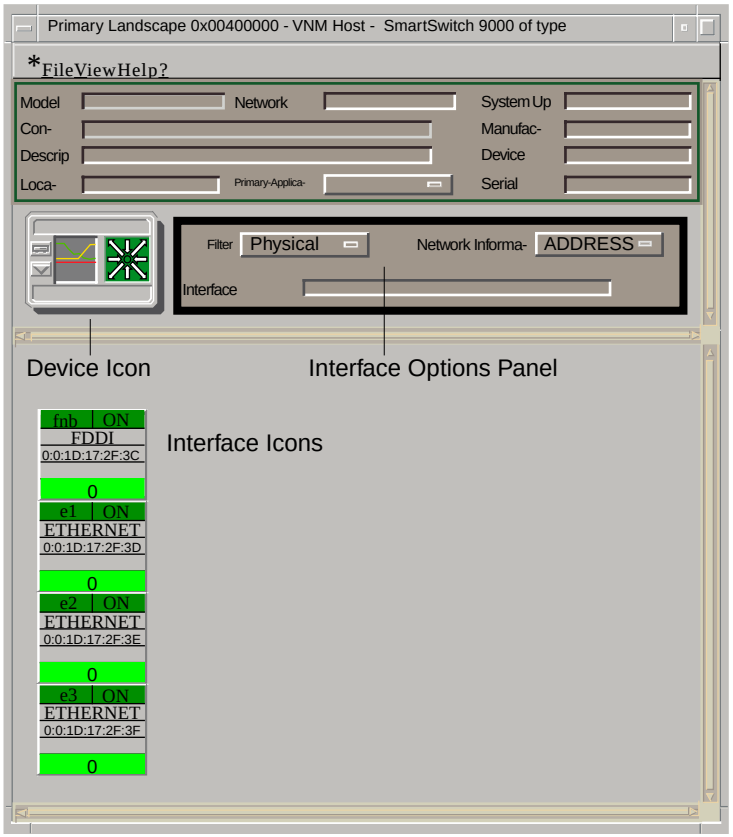
Figure 12: Physical Device View



Interface Device View

This view displays Icons (Figure 13) that represent the interfaces of the modules installed in the chassis. This view also displays the device icon and Interface Options Panel described in *SPECTRUM Views*. The icons, their double-click zones, and Icon Subviews menu selections are described under Interface Icon (page 50).

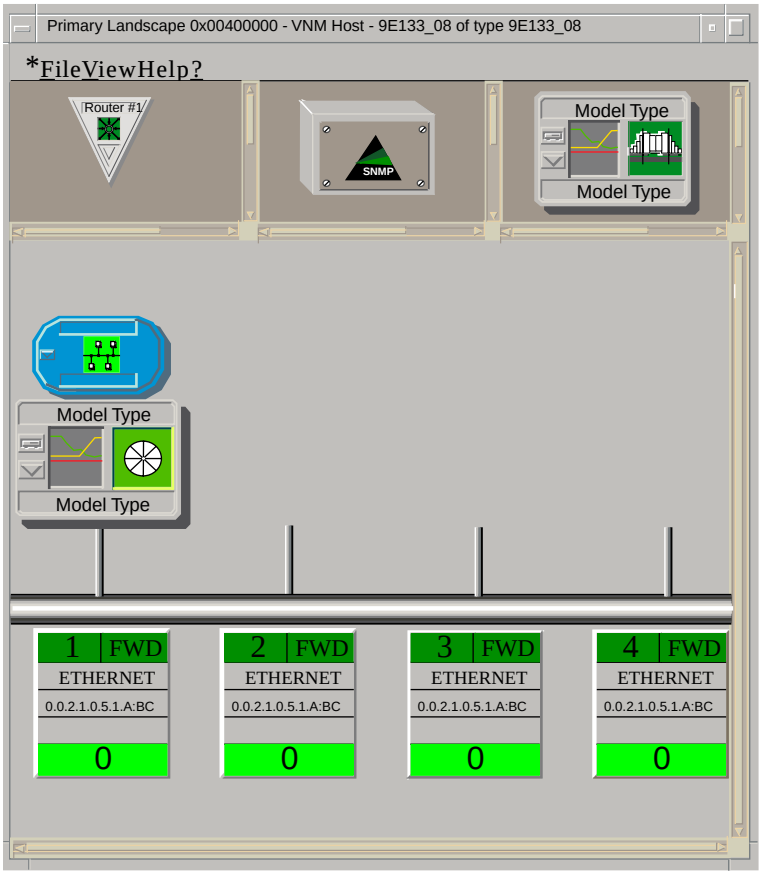
Figure 13: Example Interface Device View



Device Topology View

This view (Figure 14) displays icons that represent the device, its ports or interfaces, and the devices and LAN networks that contain those devices connected to its ports. It is described in *SPECTRUM Views*. The Interface icons displayed in this view are the same as those in the Interface Device view. These icons are described under Icons (page 36).

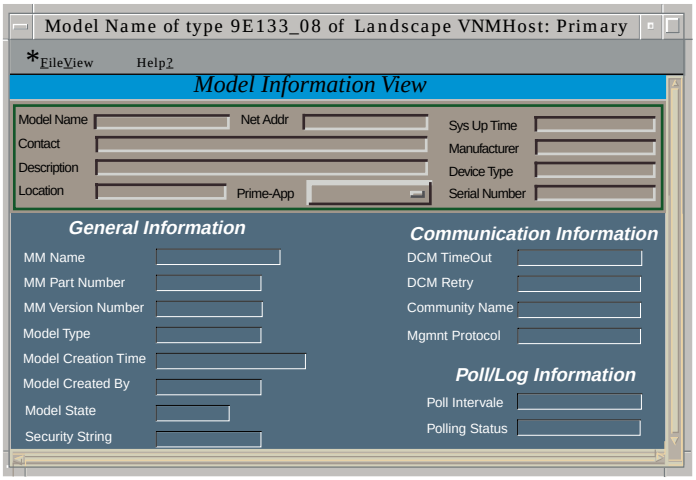
Figure 14: Example Device Topology View



Model Information View

This view (Figure 15) displays information about this device and allows you to set thresholds and alarm severity. The Model Information view may vary depending on the model it defines. For a general description of a Model Information view refer to *SPECTRUM Views* within the Device Management documentation.

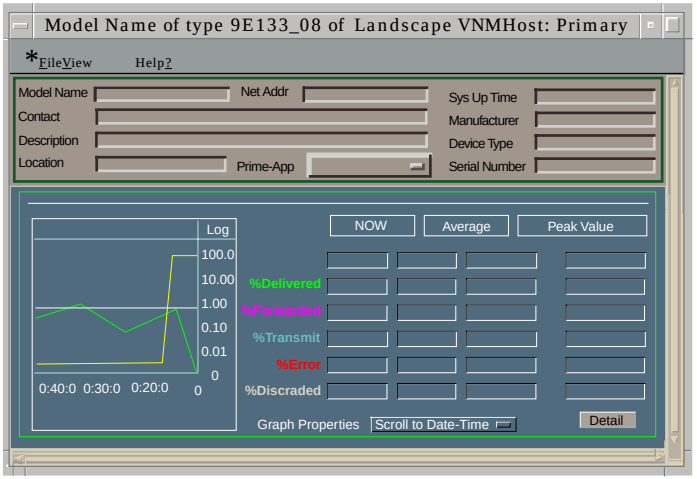
Figure 15: Example Model Information View



Performance View

This view (Figure 16) displays statistical information about the device, its ports or interfaces, and applications. The Performance view will display different statitistical information depending on the Device type, technology, or interface type. It is described in *SPECTRUM Views* within the Device Management documentation.

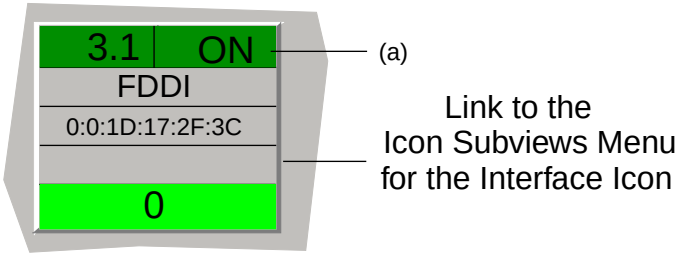
Figure 16: Example Performance View



SPECTRUM View Access

The views listed above are accessed through double-click zones on icons and from Icon Subviews menus for the particular icon displayed. The double-click zones and Icon Subviews menus available from an icon and its labels described in this document are presented as shown in Figure 17. A callout identifying a label is displayed and listed with the view accessed by the double-click zone. The Icon Subviews menu is also displayed and linked to the table that lists the menu selections available.

Figure 17: Accessing SPECTRUM Views and Icon Subviews



(a) Status Label/Performance View
Icon Label/Double-Click Access

Management Tasks

Monitor Interface or Port Operation

- ATM Client Application Configuration View (page 70)
- ATM Interface Detail View (page 72)
- Ethernet Interface Status Label (page 36)
- Repeater Port Status Label (page 42)
- FDDI Port Status Label (page 44)
- Token Ring Port Status Label (page 45)
- SMB 1 and SMB 10 Icons (page 47)
- FNB 1 and FNB 2 Icons (page 49)
- INB 1 and INB 2 Icons (page 49)

Upgrade Firmware for the Device

- Download Application (page 56)

Enable (ON) or Disable (OFF) a Port

- Ethernet Admin Status (page 57)
- FDDI Port Action (page 62)
- Repeater Network Ports (page 64)
- Token Ring
  - Enable All Ring Ports (page 74)
  - Enable All Station Ports (page 74)

Setting Repeater Traps and Alarms

- Trap Configuration (page 65)
- Alarm Configuration (page 66)

Setting Ring Alarms and Thresholds

- TR Ring Configuration View (page 76)
- Token Ring Security Configuration View (page 78)
- Configure Station Alarms (page 90)
- Station Alarms Dialog Box (page 92)

Setting Token Ring Security

- Modify Allowed Station List View (page 95)

Modeling a SmartSwitch 9000

- Modeling Considerations (page 128)
- Manual Modeling (page 129)
- Modeling the Chassis (page 130)
- Modeling the Modules in the Chassis (page 133)
- Quick Steps (page 133)

Icons

This section describes the icons used to represent the modules, ports, and applications for the SmartSwitch 9000 Series devices in SPECTRUM.

Chassis Module Icon

This icon displays a logical representation of the physical module, its location in the chassis, and its front panel interfaces or ports. Figure 18 through Figure 22 show examples of Chassis Module icons for the SmartSwitch 9000.

Note:

The Chassis Module icon representing each device will have the following basic components. Some devices may have different labels depending on the application running, front panel interfaces, and device type.

Module Identification Labels

These labels display the following information:

Slot Number Label
The location of the module within the chassis.

Model Type Label
The type of network interface module in the chassis slot.

Model Name Label
The type of network interface module in the chassis slot.

Application Access Label
This label displays the application running on the device and provides double-click access to the CSI Performance view.

Interface Labels

These labels display the following information:

Interface Type and Number Label
The number and type for this interface.

Interface Status Label
The current operating status of this interface.

Figure 18: Example Ethernet Chassis Module Icon

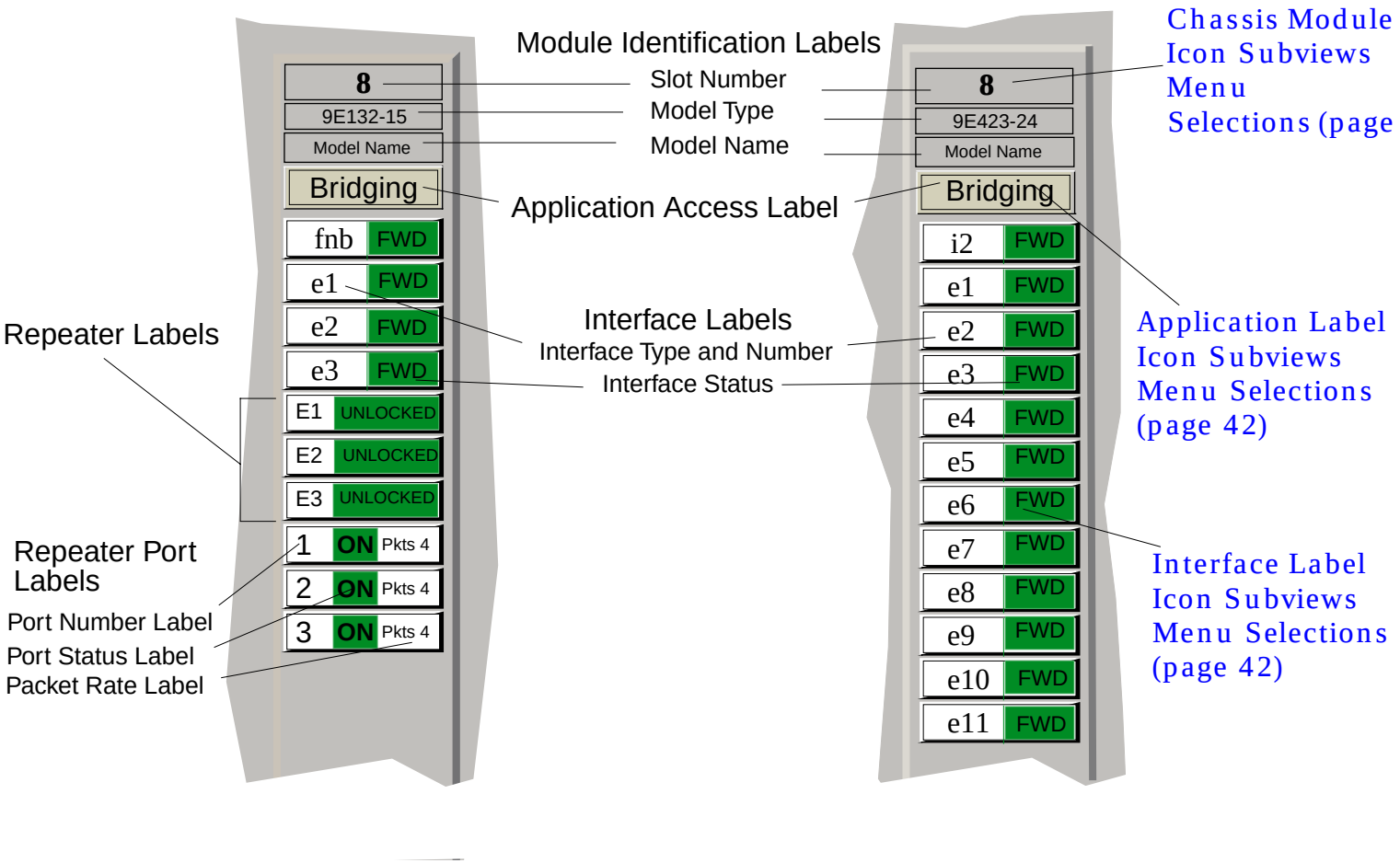


Figure 19: Example FDDI Chassis Module Icon

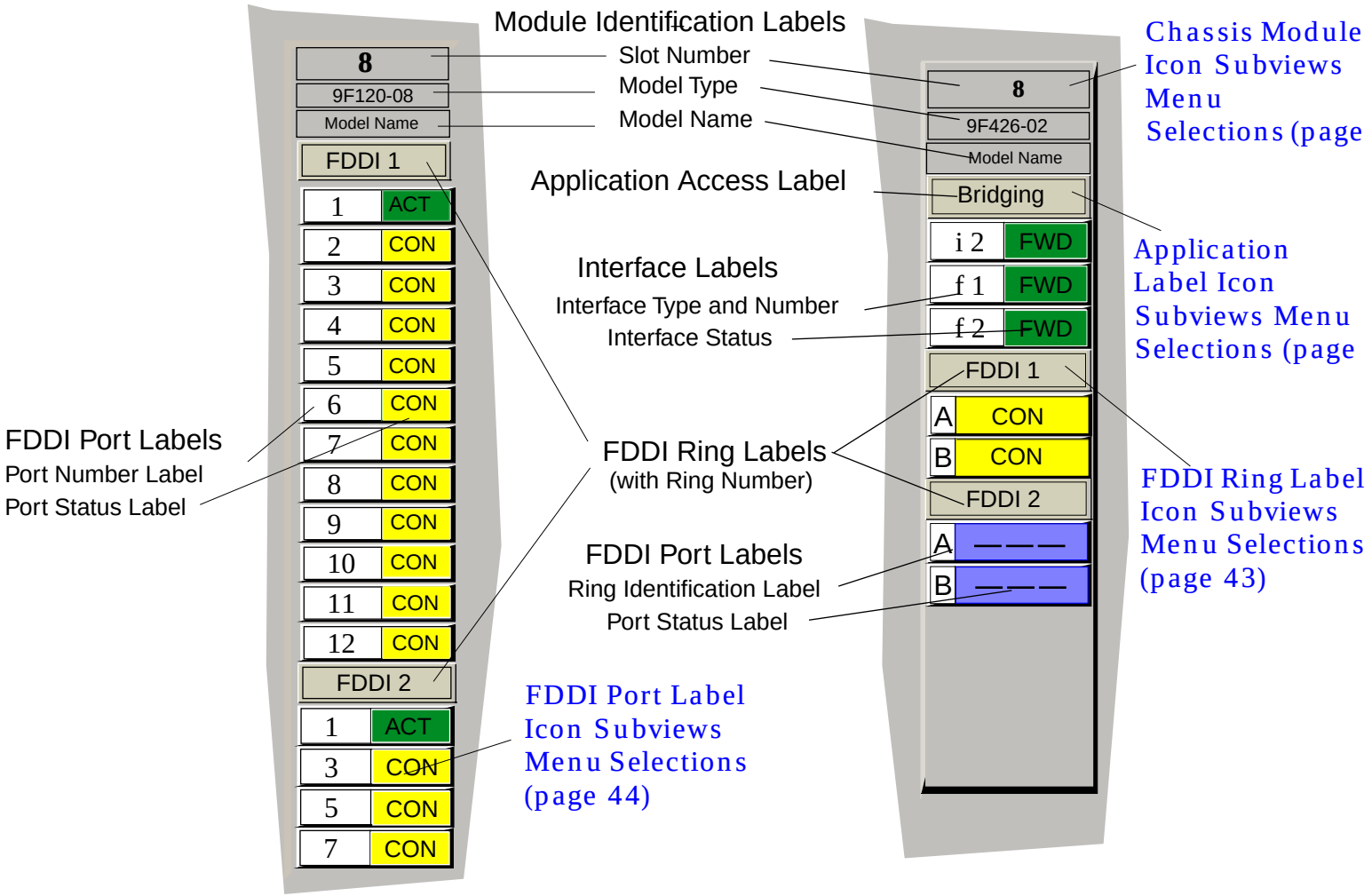


Figure 20: Example Token Ring Chassis Module Icon

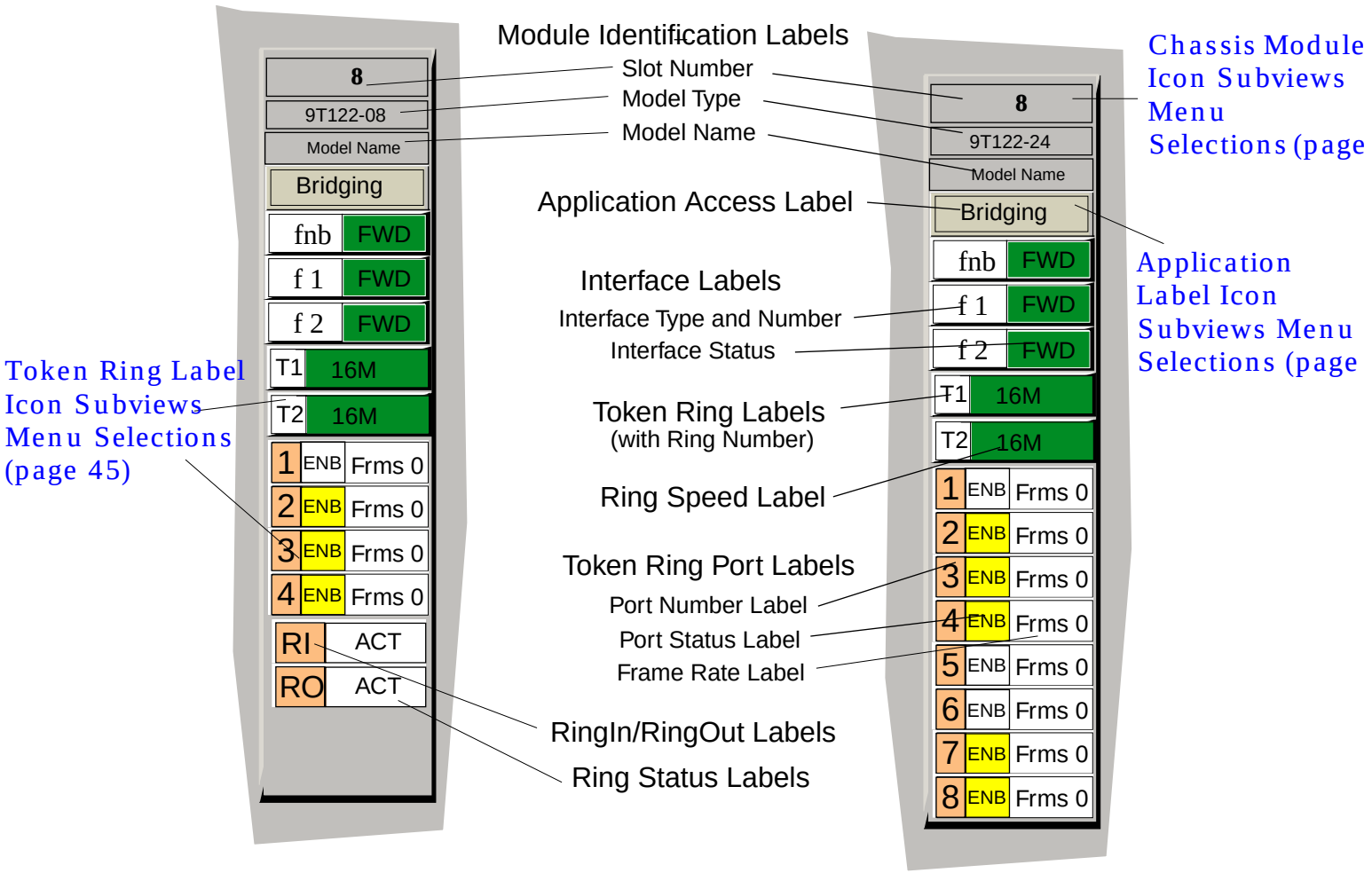
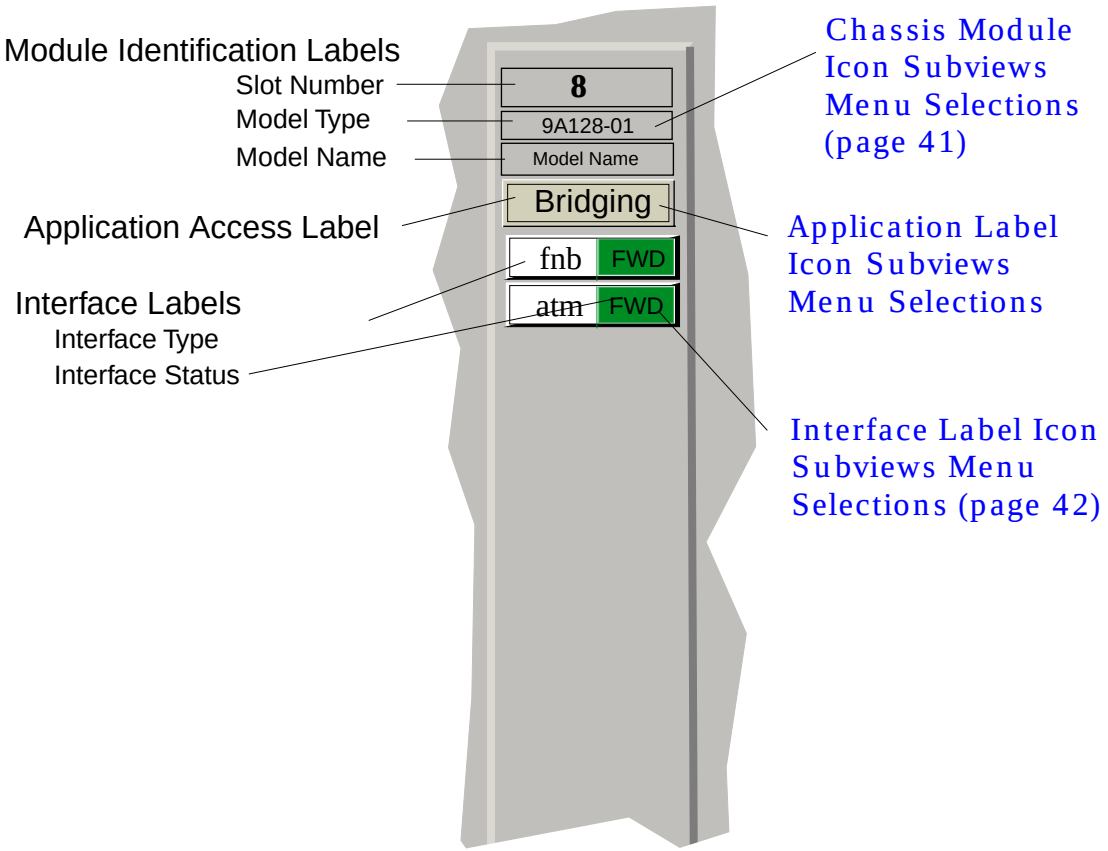


Figure 21: Example ATM Chassis Module Icon



Chassis Module Icon Subviews Menu Selections

Table 2 lists each of the Icon Subviews menu selections specific to the Chassis Module for each device within the SmartSwitch 9000 chassis. The Application view, Model Information view, and Interface Device View are described in *SPECTRUM Views*. A summary and example for each view is provided under Views for the Device Icon (page 19).

Note: **The Menu Selections listed in table 2 include all possible selections. Your device may not display all selections.**

Table 2: Chassis Module Icon Subviews Menu Selections

Menu Selection	Description
Application	Opens the Application view.
Configuration	Opens the Device Configuration View (page 56).
FNB Config View	Opens the SPMA FNB Configuration view. For details refer to the *SPECTRUM Portable Management Application for the SmartSwitch 9000 User's Guide*.
Model Information	Opens the Model Information view.
Reconfigure Model	Reconfigures the Chassis Device view.
Interface	Opens the Interface Device View.
Application Display	Opens the Application selection dialog box. This dialog box allows you to select the application to be displayed in the Application label. Example: Bridging.

Application Label Icon Subviews Menu Selections

Table 3 lists the module-specific Icon Subviews menu selections available for the Bridging Application Label described in *Bridging Applications*.

Table 3: Bridging Icon Subviews Menu Selections

Menu Selection	Description
Bridge Performance	Opens the Bridge Performance view.
Bridge Model Information	Opens the Model Information view.
Special Database	ERROR MESSAGE APPEARS: NO MODELS EXIST ON THIS RELATION.
Spanning Tree Information	Opens the Spanning Tree Information view.
Static Database Table	Opens the Static Database Table view.
Transparent Bridge Info	Opens the Transparent Bridge Information view.

Interface Label Icon Subviews Menu Selections

Table 4 describes each of the device-specific Icon Subviews menu selections available for the Interface Label.

Table 4: Interface Label Icon Subviews Menu

Menu Selection	Description
Channel Performance	Opens the CsIIfPort Performance view.
Configuration	Opens the Port Configuration - CSIIf Port View (page 57).

Repeater Labels

These labels display information pertaining to the repeater ports as follows:

Port Number Label

Identifies the number for the port.

Port Status Label

Displays the current operating status of this port. Table 5 lists the possible conditions values and associated colors.

Frame Rate Label

The frame traffic rate over this port.

Table 5: Repeater Port Status and Conditions Values and Colors

Color	Status	Description
Green	ON	Port is operational.
Blue	OFF	Port is off.
Yellow	TST	Port is in the test mode.

FDDI Ring Label

This label (Figure 19) represents the front panel FDDI connection and provides double-click access to the Ring Performance view.

FDDI Ring Label Icon Subviews Menu Selections

Table 6 describes each of the device-specific Icon Subviews menu selections available for the FDDI Ring Label.

Table 6: FDDI Icon Subviews Menu

Menu Selection	Description
FDDI Performance	Opens the FDDI Performance view. (Not available for FddiNoMAC).
FDDI Configuration	Opens the FddiMAC Device Configuration View (page 58).
FDDI Station List	Opens the Fddi Station List View (page 68) (Not available for FddiNoMAC).
FDDI Model Information	Opens the Model Information view.

FDDI Port Labels

These labels (Figure 19) display information pertaining to the network interface module ports. These areas are as follows:

Port Number Label
Identifies the port on the ring.

Ring Identification Label
Identifies the ring this port is connected to (A or B).

Port Status Label
Displays the status of this port. Table 7 lists the possible states and corresponding colors.

Table 7: FDDI Port Status and Descriptions

Color	State	Description
Green	ACT	Port is active and connected to the FNB.
Blue	DIS	Port is disabled.
Yellow	CON	Port is in the connecting state.
Blue	- - -	A potential connection to the FNB exists but is not made at this time.

FDDI Port Label Icon Subviews Menu Selections

Table 8 describes each of the device-specific Icon Subviews menu selections available for the FDDI Port Label.

Table 8: FDDI Port Icon Subviews Menu

Menu Selection	Description
Attribute Walk	Opens the Attribute Walk view.
Enable/Disable Port	Allows you to Enable or Disable the port.
Port Configuration	Opens the FDDI Port Configuration View (page 62).

Token Ring Label

This label (Figure 20) represents the Token Ring connection and displays the ring number it represents. Double-click this label to access the Token Ring Configuration View (page 73).

Token Ring Label Icon Subviews Menu Selections

Table 9 describes each of the device-specific Icon Subviews menu selections available for the Token Ring Label.

Table 9: Token Ring Icon Subviews Menu

Menu Selection	Description
Configuration	Opens the Token Ring Configuration View (page 73).
Model Information	Opens the Model Information view.
Stations	Opens the Token Ring Station Table View (page 80) .
Station Errors	Opens the Token Ring Station Isolating Errors View (page 82).
Speed Fault	Opens the Token Ring Station Detail View (page 90).
Change Ring Speed	Allows you to set the ring speed to 4M or 16M.

Ring Speed Label

This label displays the speed this ring is configured to operate at (4M or 16M). Double-click on this area to open the Change Ring Speed view for the selected ring. This view allows you to set the desired ring speed.

Token Ring Port Labels

These labels display information pertaining to the network interface module ports. These areas are as follows:

Port Number Label

Identifies the port on the ring.

Port Status Label

Displays the status of this port. Table 10 lists the possible conditions values and associated colors.

Frame Rate Label

The frame traffic rate over this port. Double-click on this area to open the Token Ring Station Detail View (page 90).

Table 10: Port Status Condition Values and Colors

Condition	Color
INIT (Initial)	Gray
ENB (Enabled)	Yellow
BYP (Bypassed)	Blue
DIS (Disabled)	Blue
INS (Inserted)	Green
ACT (Active)	Green
WRP (Wrapped)	Red

RingIn/Ring Out and Ring Status Labels

These labels displays the operational status of the Ring In and the Ring Out.

Token Ring Port Icon Subviews Menu Selections

Table 11 describes the Icon Subviews menu selections available for Token Ring ports.

Table 11: Token Ring Port Icon Subviews Menu Selections

Menu Selection	Description
Port Notes	Opens the SPECTRUM Notes facility for the port.
Port Configuration	Opens the Token Ring Configuration View (page 73).
Station Detail	Opens the Token Ring Station Detail View (page 90).
Enable/Disable Port	Opens the Enable/Disable Port view, allowing you to toggle the state of the port.

Backplane Module Icon

This icon displays a logical representation of the physical module, its location in the chassis, and its backplane interfaces and ports. Figure 22 shows an example of the Backplane Module icon.

Module Identification Labels

These labels display the following information:

Slot Number Label

The location of the module within the chassis.

Model Type Label

The type of network interface module in the chassis slot.

Model Name Label

The type of network interface module in the chassis slot.

SMB 1 and SMB 10 Icons

The System Management Bus (SMB) icons represent the connections between the module and the SMB 1 and SMB 10. Table 12 describes the possible operational states.

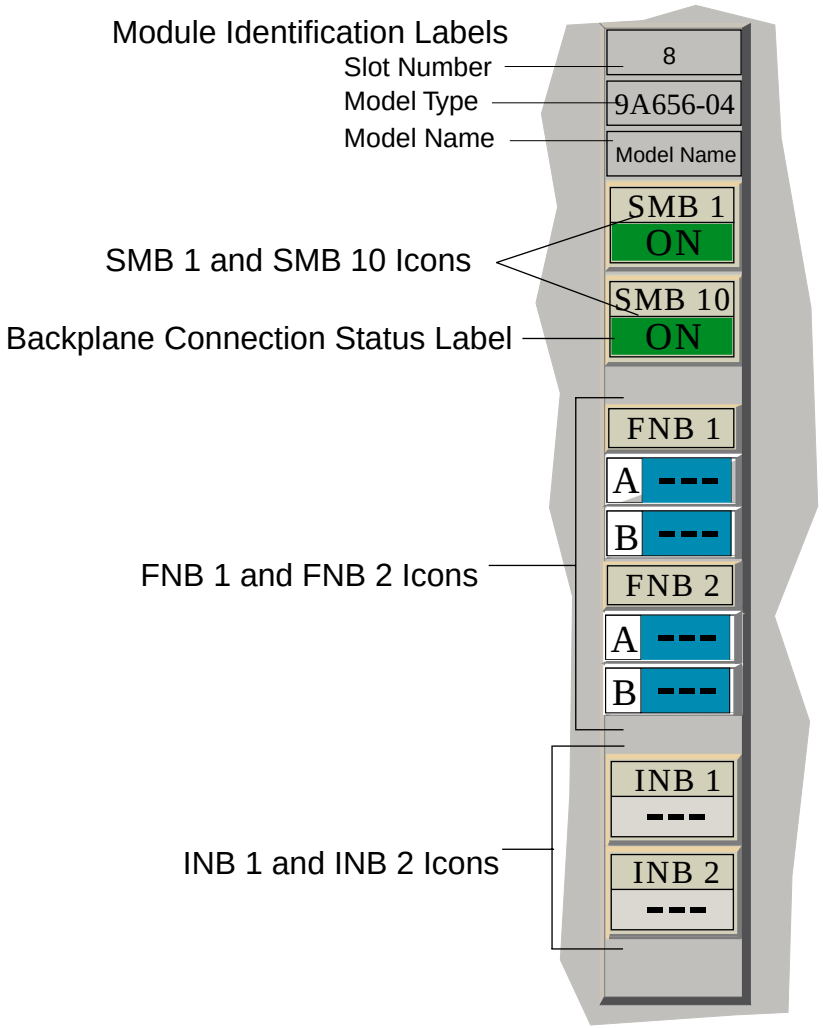
Table 12: SMB 1 and SMB 10 Status Descriptions

Color	Status	Description
Blue	OFF	The module is not connected to the SMB.
Green	ON	The module is connected to the SMB.
Yellow	TST	The interface is in the test state.

Table 12: SMB 1 and SMB 10 Status Descriptions (Continued)

Color	Status	Description
Grey	- - -	The interface could not be found for this module.
Red	- - -	Problems have occurred reading and determining the status of the interface.

Figure 22: Example Backplane Module Icon



FNB 1 and FNB 2 Icons

The Flexible Network Bus (FNB) icons (Figure 22) represent the connections between the module and the FNB 1 and FNB 2. Table 13 describes the possible operational states.

Table 13: FNB 1 and FNB 2 Status Descriptions

Color	Status	Description
Blue	---	The module is not connected to the FNB but has the potential to be connected.
Blue	DIS	The module is disabled.
Yellow	CON	The module is in the process of connecting to the FNB.
Green	ACT	The module is connected to the FNB and is active.
Red	SBY	The module is in standby mode.
Red	---	Problems have occurred reading and determining the status of the interface.

INB 1 and INB 2 Icons

The Internal Network Bus (INB) icons (Figure 22) represent the connections between the module and the INB 1 and INB 2. Table 14 describes the possible operational states.

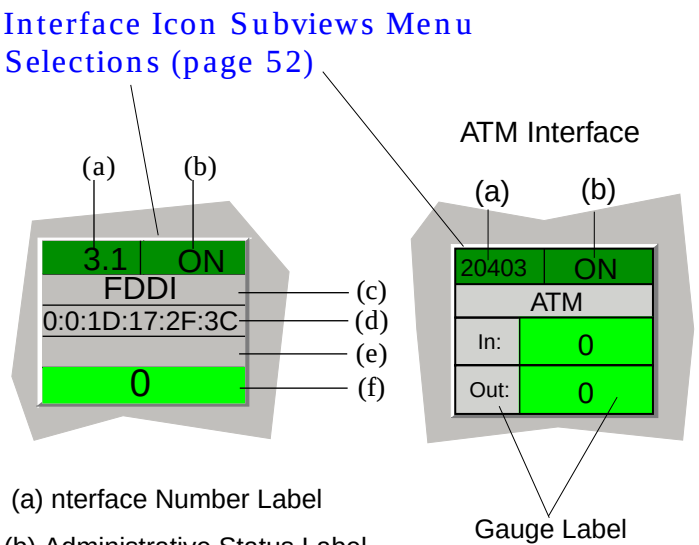
Table 14: INB 1 and INB 2 Status Descriptions

Color	Status	Description
Blue	OFF	The module is not connected to the INB.
Green	ON	The module is connected to the INB.
Yellow	TST	The interface is in the test state.
Grey	- - -	The interface for this module could not be found.
Red	- - -	Problems have occurred reading and determining the status of the interface.

Interface Icon

This section describes the network interface module icons. Figure 23 provides an example of the network interface module icon and displays its labels/double-click zones.

Figure 23: Interface Icon



(a) nterface Number Label

(b) Administrative Status Label

(c) Port Type Label

(d) MAC Address Label

(e) Network Information Label

(f) Gauge Label

Interface Number Label

This label displays the number identifying this interface. The first number represents the slot that this module resides in. The second number represents the interface number on this module.

Administrative Status Label

This label displays the administrative state of this port. It also provides double-click access to the Port Configuration - CSIIf Port View (page 57).

Table 15 and Table 16 list the possible states relative to the application selected. The default application for this view is Physical (MIB-II). To select the application to be displayed (Physical or Bridging), click the Filter menu button in the Interface Options panel.

Table 15: Administrative Status for the Physical Application

Color	Status	Description
Green	ON	Port is operational.
Blue	OFF	Port is off.
Yellow	TST	Port is in the test mode.

Table 16: Administrative Status for the Bridging Application

Color	Status	Description
Green	FWD	Bridge port is forwarding.
Blue	DIS	Port is disabled.
Magenta	LST	Bridge is in the listening mode.
Magenta	LRN	Bridge is in the learning mode.
Orange	BLK	Bridge port is in the blocking mode.
Red	BRK	Bridge port is broken.
Blue	???	Status is unknown.

Port Type Label

This label displays the type of network interface module.

MAC Address Label

This label displays the physical address of the network interface module. It also provides double-click access to the Model Information view described in the *SPECTRUM Views* documentation.

Network Information Label

The Network Information label displays a user-selectable network information field. You can select the field to display (Network Address, Name, or Subnet Mask) using the interface options panel. The default field is the Network Address. Double-click this label to access the Secondary Address Panel described in the *SPECTRUM Views* documentation.

Gauge Label

The Gauge label displays the color of the statistic selected for the Interface icon from the Gauge Control Panel described in the *SPECTRUM Views* documentation and provides double-click access to the Performance view.

Table 17 lists the attributes available for the 9A656-04 ATM Interface icon.

Table 17: ATM Interface Attributes and Corresponding Color

Selected Attribute	Color
Load (In/Out)	Green
Octets (In/Out)	Violet
Cells (In/Out)	Blue
Error Cells (In)	Orange

Interface Icon Subviews Menu Selections

Table 18 describes each of the Icon Subviews menu selections available for the interface icon.

Table 18: Interface Icon Subviews Menu Selections

Menu Selection	Description
Protocols (ATM Interface Only)	Opens the ATM Client Application Configuration View (page 70) or Performance view.
Detail (SFSmartCell Only)	Opens the ATM Interface Detail View (page 72).
Configuration	Opens the Port Configuration - CSIIf Port View (page 57).
Model Information	Opens the Model Information view.

Application Icon

These icons (Figure 24) represent the device-specific applications, common applications and optional applications supported by these devices. Table 19 lists the menu selections available from the Icon Subviews menu for device-specific applications. (Refer to the *SPECTRUM Views* documentation for information on the Performance, Device Topology and Model Information views.) Table 20 lists the applications that are common to many or all devices and the documentation that describes them. For information on the following optional applications, refer to the associated documenation.

Optional Applications

- Routing Services (CtRouter)
- DLM (DLM_Agent)
- Standard RMON (RMONApp)
- SecureFast VLAN (SFVLANApp)

Figure 24: Example Application Icon

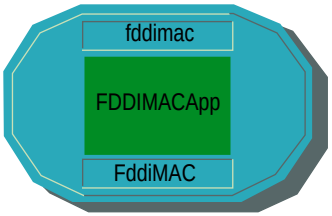


Table 19: Device-Specific Applications

Application	Menu Selections/Views
Chassis Manager (MMACChasApp)	Component Table - Opens the Component Table view. This view is an SPMA view. Refer to the SPMA documentation for information about this view.
MMACPlus Token Ring (MPlusTRApp)	Stations - Opens theToken Ring Station Table View (page 80). Station Errors - Opens theToken Ring Station Isolating Errors View (page 82). Configuration - Opens the Token Ring Configuration View (page 73).
MMACPlus Repeater (MMACPlusRptr)	Configuration - **Opens the Repeater Configuration View (page 64).** Performance - Opens the Performance view for the Repeater.

Table 20: Common Applications Supported

Application	Reference
Bridging (CSIBridge)	*Bridging Applications*
MIB-II (SNMP2_Agent)	*MIB-II Applications*
DownLoad (CtDownLoad App)	*Miscellaneous Applications*
FDDI (FddiMAC)	*Miscellaneous Applications*
ATM (ATMClientApp)	*Miscellaneous Applications*
Fast Ethernet (FastEnetApp)	*Miscellaneous Applications*

Icon Subviews

This chapter provides general descriptions of the Configuration and application-specific views that display MIB information for the SmartSwitche 9000 Series.

The Configuration views allow you to access network configuration information for the device and its interfaces or ports. The SmartSwitches 9000 support the following Configuration views:

- Device Configuration View (page 56)
- Port Configuration - CSIIf Port View (page 57)
- Repeater Configuration View (page 64)
- FddiMAC Device Configuration View (page 58)
- FDDI Port Configuration View (page 62)
- ATM Client Application Configuration View (page 70)
- ATM Interface Detail View (page 72)
- Token Ring Configuration View (page 73)
- TR Ring Configuration View (page 76)
- Token Ring Security Configuration View (page 78)

The application-specific views available for the SmartSwitch 9000 provide information for the applications running on an individual device.

These views are accessible from the Application icons or Application labels displayed on the Device view icons. The following application-specific views are described in this section:

- Fddi Station List View (page 68)
- FDDI Stats View (page 69)
- Token Ring Station Table View (page 80)
- Token Ring Station Isolating Errors View (page 82)
- Token Ring Station Non-Isolating Errors View (page 85)
- Token Ring Station Alarm Thresholds View (page 87)
- Token Ring Station Detail View (page 90)
- Station Alarms Dialog Box (page 92)
- Modify Allowed Station List View (page 95)

Device Configuration View

This view (accessed from the Device icon) provides the following information and operating status:

Contact Status
This field indicates if a connection with the device has been established.

Component Table

This button provides access to the Community Names view. This is an SPMA view. For information on using the Community Name view, refer to the *SPECTRUM Portable Management Application Tools Guide*.

Download Application

This button provides access to the DownLoad Application view which allows you to upgrade the firmware for the devices from a TFTP Boot or Bootp Server. For more information on this view, refer to the *SPECTRUM Portable Management Application Tools Guide*.

Interface Configuration Table

Number of Interfaces
Displays the number of interfaces available from this device.

Index
The numerical value identifying the port.

Type
The type of hardware interface for the port.

Phy Address
The (MAC) address of the port.

Max Frame Size
The maximum frame size for the SmartSwitch network interface modules.

Oper Status
The current operational state of this port Up,Down, or Testing).

Port Configuration - CSIIf Port View

This view displays port-specific information for this device. Access this view from the Icon Subviews menu for the Chassis Module Icon (page 36) and Interface Icon (page 50).

Interface Index
The numerical value identifying the port.

Interface Type
The type of interface for the port (FDDI).

Operation Status
The current operating state of the port. Possible values are On, Off, or Test.

Admin Status
This field provides a button that allows you to change the current administrative state of the port. Possible values are On, Off, or Test.

IF Description
Displays a textual description of the interface.

FddiMAC Device Configuration View

This view provides information on the configuration and operating status of the concentrator. Access this view using one of the following methods:

- Highlight the FddiMAC Application Icon (page 53) and from the Icon Subviews menu select Configuration.
- Highlight the FDDI Ring Label (page 43) in the Chassis Device view and from the Icon Subviews menu select FDDI Configuration.

Station Configuration

This area of the FddiMAC Device Configuration view provides information specific to the FDDI station:

Ring State
The current state of the FDDI Ring. Table 21 lists the possible states and their descriptions.

MAC Configuration
Displays the actual configuration of the station. Table 22 lists the possible configurations and their descriptions.

Current MAC Path
The ring that this station resides on. Possible entries are Primary, Secondary, Local or Isolated.

MAC Address
The MAC (physical) address of this station.

MAC Count
The number of MACs supported by this station.

Non Master Ports
The number of non-master ports on this station.

Master Ports
The number of master ports on this station.

Continued...

SMT Information

This section of the FddiMAC Device Configuration view provides the following configuration information on the FDDI SMT:

SMT Version
The version of Station Management (SMT) running.

OBS Present
Indicates whether an Optical Bypass Switch (OBS) is connected.

T-Notify (sec)
The timer value, in seconds, used in Neighbor Notification Protocol. The allowed range is from 2 to 30 seconds.

T-Req (milli sec)
The Target Token Rotation Time (TTRT) bid, in milliseconds, made by this concentrator.

T-Neg (milli sec)
The winning TTRT bid, in milliseconds, on the ring.

TVX (milli sec)
The valid transmission time, in milliseconds.

Table 21: FDDI Ring States

Ring States	Description
Isolated	The concentrator is not attached to the ring.
Non-Op	The concentrator is attempting to enter the ring.
Ring-Op	The ring is operational.
Detect	The claim/beacon process of the FDDI ring protocol has exceeded 1 second. This indicates a potential problem.
Non-Op-Dup	The ring failed to complete the claim/beacon process because a duplicate FDDI address has been detected.
Ring-Op-Dup	The ring is operational, but a duplicate FDDI address has been detected.
Directed	The claim/beacon process did not complete within 9 seconds. The concentrator is now sending directed beacons to indicate a problem.
Trace	A problem has been detected with the station or its upstream neighbor. A trace is being sent to notify the upstream neighbor of the problem. The concentrator and all stations between the concentrator and its upstream neighbor can perform self-tests.

Table 22: SMT MAC Configurations

Ring States	Description
Isolated	The path is not inserted into any path.
Local_A	The A port is inserted into a local path and the B port is not.
Local_B	The B port is inserted into a local path and the A port is not.
Local_AB	Both A and B are inserted into a local path.
Local_S	The S port is inserted into a local path.
Wrap_A	The secondary path is wrapped to the A port.
Wrap_B	The secondary path is wrapped to the B port.
Wrap_AB	The primary path is wrapped to the B port and the secondary path is wrapped to the A port.
Wrap_S	The primary port is wrapped to the S port.
C_Wrap_A	The primary and secondary paths are joined internally in the station and wrapped to the A port. Regarding token flow, all resources on the secondary path precede those of the primary path.
C_Wrap_B	The primary and secondary paths are joined internally in the station and wrapped to the B port. Regarding token flow, all resources on the secondary path precede those of the primary path.
C_Wrap_S	The primary and secondary paths are joined internally in the station and wrapped to the S port. Regarding token flow, all resources on the secondary path precede those of the primary path.
Thru	The primary path enters the A port and emerges from the B port. The secondary path enters the B port and emerges from the A port.

FDDI Port Configuration View

This view provides information on the configuration and operating status of the ports. To access this view, highlight the FDDI Port Labels (page 43) in the Chassis Device view and select **Port Configuration** from the Icon Subviews menu.

Port Management

This section of the FDDI Port Configuration view provides the following information:

Port Action
This field provides a button that allows you to enable/disable the port. The state returns to "Other" once the port has been Enabled/Disabled.

Port State
The status of this port. Possible states are disabled, connecting, standby, and active.

Port Type
The type of port. Possible port types are A_Port, B_Port, Slave, or Master.

Link Error Rate Estimate
The link error rate estimate is a cumulative long-term average of the bit error rate, which represents the quality of the physical link. The link error rate estimate is computed when the port is connected and every 10 seconds thereafter. It ranges from 10^{-4} to 10^{-15} and is reported as a whole integer. For example, if the port's link error rate estimate is computed to be 10^{-5}, the value reported in this field would be 5, which represents an actual rate of 1,250 bit errors per second. A lower link error rate estimate indicates a higher bit error rate as shown in Figure 25.

Link Error Monitor Count
The aggregate link error monitor count. This count is set to zero on station power up and increments each time the port's link error monitor detects an error. An increasing link error monitor count usually indicates a problem with the

connectors or the cable between this port and the node.

Link Error Rate Cutoff

The link error rate threshold at which a link connection is flagged as faulty and the port disabled by SMT. The default link error rate cutoff threshold is 7, which represents 12.5 bit errors per second.

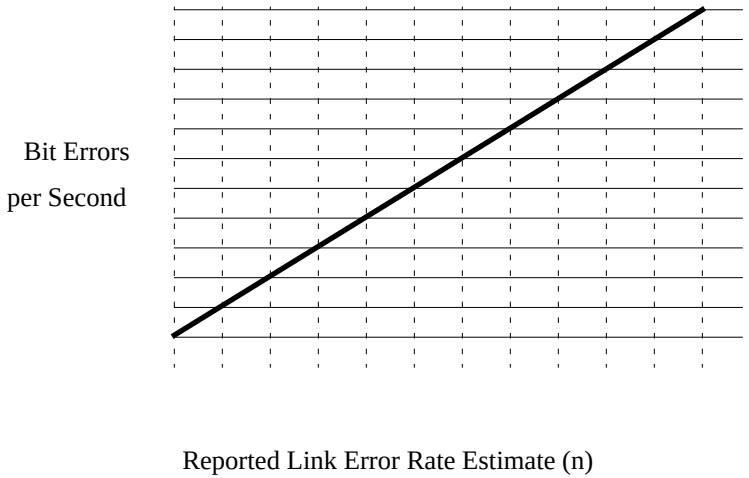
Link Error Rate Alarm

The link error rate threshold that, if exceeded, generates an alarm for the port. The default link error rate alarm threshold is 8, which represents 1.25 bit errors per second.

Link Error Monitor Reject Count

The link error monitor count of the times the link has been rejected.

Figure 25: Link Estimate Table



Repeater Configuration View

This view provides information on the configuration and operating status of the network the repeater is monitoring. To access the Repeater Configuration view, do the following:

- Within the Application view, highlight the MMACPlusRptr Application Icon (page 53). From the Icon Subviews menu, select Configuration.
- Within the Chassis Device view, highlight the Repeater Labels (page 42). From the Icon Subviews menu, select Repeater Configuration.

Repeater Management

This area of the Repeater Configuration view provides the following port information:

Port Count
The total number of ports on this LAN segment.

Ports On
The total number of ports currently in the ON state on this network.

Ports Operational
The number of operational ports on this network.

Network Ports
Allows you to select the desired operational state of network ports on this network segment (Enable or NoEnable).

Network Port Security
Allows you to select the security status of repeater ports (UnLocked or Locked).

Continued...

Source Address Management

This area of the Repeater Configuration view indicates the timeout period, in seconds.

Ageing Interval
The time, in seconds, that dynamically learned forwarding information remains in the database before being selected.

Trap Configuration

This area of the Repeater Configuration view allows you to enable or disable any of the following types of traps.

Link Traps
When enabled, all packets indicating a change in link status are reported within the trap database (NoEnable, Enable or other).

Segmentation Traps
When enabled, all packets indicating a change in segmentation status are reported within the trap database (NoEnable, Enable or other).

Source Address Traps
When enabled, all packets indicating a change in source address are reported within the trap database (NoEnable, Enable or other).

Continued...

Alarm Configuration

This area of the Repeater Configuration view provides configuration information on generating alarms for the selected module. The configuration information is as follows:

Timebase
This field allows you to set the alarm timebase. The timebase is the number of seconds used as the interval for performing all of the rate alarm checks. The minimum is 10 seconds. For example, if the timebase is 10 seconds, an alarm will occur only when the specified number of errors occurs within 10 seconds.

Traffic Alarms
Allows you to turn traffic alarms off and on (NoEnable or Enable).

Traffic Threshold
The threshold value within the alarm timebase that, once the number of packets is exceeded, generates a traffic alarm.

Collision Alarms
Allows you to turn collision alarms off and on (NoEnable or Enable).

Collision Threshold
The threshold value within the alarm timebase that, once the number of collisions per good packet is exceeded, generates a collision alarm.

Broadcast Alarms
Allows you to turn broadcast alarms off and on (NoEnable or Enable).

Broadcast Threshold
The threshold value within the alarm timebase that, once the number of broadcasts received is exceeded, generates a broadcast alarm.

Error Alarms
Allows you to turn error alarms off and on (NoEnable or Enable).

Error Threshold
The threshold value within the alarm timebase that, once the percentage of errors per good packet is exceeded, generates an error alarm.

Continued...

Error Source

This area of the Repeater Configuration view provides a series of buttons allowing you to select the types of errors to include in the error sum. The selectable error types are as follows:

CRC
The number of packets received by the module with bad Cyclical Redundancy Checks (CRCs).

Runts
The number of runt packets received by the module. A runt packet is one byte less than the standard Ethernet frame of 64 bytes (not including preamble).

OOW_Colls
The number of collisions out of the standard window (51.2µs) due to a network problem.

Alignment
The number of misaligned packets detected by the module.

No_Resource
The number of times the module ran out of resources (i.e., lack of buffer space) and could not accept packets.

Giants
The number of giant packets received by the module. A giant packet exceeds 1518 bytes (not including preamble).

Fddi Station List View

This view displays the configuration of the FDDI ring, basic information about the devices in the ring, and FDDI network. You can access this view from the Icon Subviews menu for the FddiMAC Application Icon (page 53) or the FDDI Ring Label (page 43) in the Chassis Device View.

Update, Print, Sort and Find

Use these buttons to perfom the functions listed to the contents of the Station Table.

MAC/Canonical

This button affects the display of the station addressed, toggling between MAC (Physical) and Canonical (Ethernet). This button displays the format NOT currently selected.

Station Address

The MAC or Canonical address of this node on the ring.

Node Class

The type of FDDI ring device. Table 23 describes possible node classes.

Ring Topology

The current state of this FDDI node.

Master Ports

The number of master ports on this node. Values range from 0 to 255.

Upstream Neighbor

The canonical or MAC address of the last node to receive the token before this node.

Table 23: FDDI Node Classes

Node Class	Description
Station	An FDDI node capable of receiving, transmitting, and repeating data.
Concentrator	An FDDI node that provides attachment points for stations that are not directly connected to the FDDI ring.

FDDI Stats View

The FDDI Stats view displays the bandwidth statistics of the FDDI ring and basic information about the devices on the ring and FDDI network. To access this view, highlight the Fddi MAC Application Icon (page 53) (Icon Mode), or text label (List Mode) and select **Bandwidth Util** from the **Icon Subviews** menu.

Fddi Frames (Frm/Sec)
Provides the number of FDDI frames per second for the device.

Fddi KBytes (Kb/Sec)
Provides the number of FDDI KBytes per second for the device.

Fddi Peak KBytes (Kb/Sec)
Provides the number of FDDI peak KBytes per second for the device.

Time of Peak
Provides the time of peak in Day:Month:Time:Year format for the device.

Bandwidth Utilization %
Provides the amount (in percent) of bandwidth utilized by the device. The chart provides a graphical representation of the bandwidth being utilized in bytes/second on the FDDI ring.

ATM Client Application Configuration View

This view provides configuration information on the ATM Client Application. To access this configuration view, highlight the ATM Interface Icon (page 50) and from the **Icon Subviews** menu select **Protocols -> ATMClientApp -> Configuration**.

Configuration Table

Max VPCs (Virtual Path Connections)
Indicates the maximum number of VPCs supported at this ATM interface. At the UNI (User Network Interface), the maximum number of VPCs ranges from 0 to 256.

Max VCCs (Virtual Channel Connections)
Indicates the maximum number of VCCs supported at this ATM interface.

Conf VPCs
Indicates the number of VPCs configured for use at this ATM interface. At the UNI (User Network Interface), the configured number of VPCs ranges from 0 to 256.

Conf VCCs
Indicates the number of VCCs configured for use at this ATM interface.

Max VPI (Virtual Path Identifier) Bits
Indicates the maximum number of active VPI bits configured for use at this ATM interface. At the UNI (User Network Interface), the maximum number of active VPI bits configured for use ranges from 0 to 8.

Max VCI (Virtual Channel Identifier) Bits
Indicates the maximum number of active VCI bits configured for use at this ATM interface.

ILMI (Interim Local Management Interface) VPI
Indicates the VPI value of the VCC supporting the ILMI at this ATM interface. If the values of both ILMI VPI and ILMI VCI equal 0, then the ILMI is not supported.

Continued...

ILMI VCI
Indicates the VCI value of the VCC supporting the ILMI at this ATM interface. If the values of both ILMI VPI and ILMI VCI equal 0, then the ILMI is no supported for this ATM interface.

Address Type
Indicates the type of primary ATM address configured for use at this ATM interface.

Admin Address
Indicates the address assigned for administrative purposes.

Neighbor Address
Indicates the IP address of the neighbor system at the far end of this interface to which a Network Management Station can access network management information.

Neighbor If Name
Indicates the name of the interface on the neighbor system at the far end of this interface, to which this interface connects. If the neighbor system is manageable through SNMP and supports the object ifName, the value of this object must be identical to that of the ifName for the ifEntry of the lowest level physical interface for this port. If this interface does not have a name, the value of this object is a zero length string.

The Configuration table can be sorted, searched, and updated using the following buttons within the view:

Sort

Allows you to sort the table based on the column heading you select. Just select a column heading and click the Sort button. The table is rearranged according to the chosen column.

Find

Allows you to search the table for a specific entry. Just select a column heading, click the Find button, and enter a search string in the dialog box.

Update

Allows you to update information in the table.

ATM Interface Detail View

This view displays cell performance breakdown information for ATM as shown in Figure 26. To access this view, select **Detail** from the Icon Subviews menu for the ATM Interface Icon (page 50).

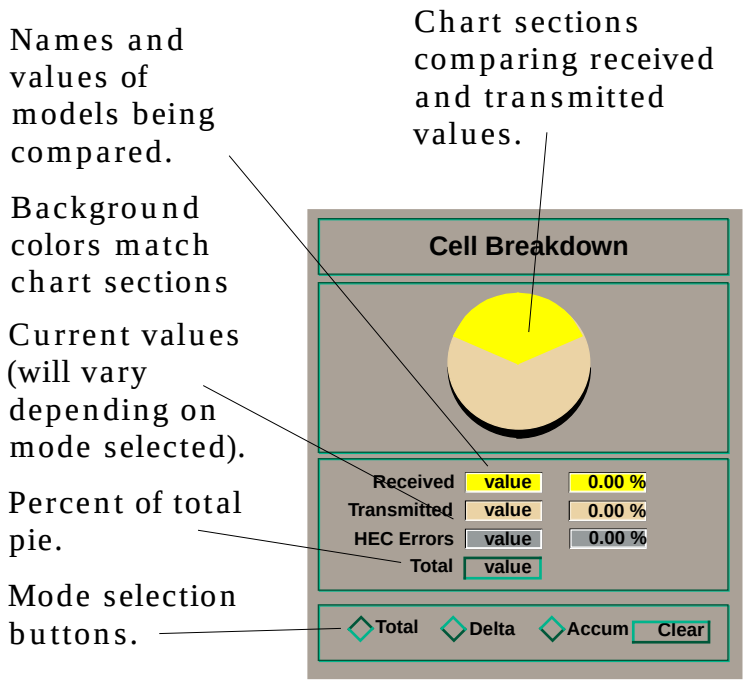
Received
Displays the number of cells received by the switch.

Transmitted
Displays the number of cells transmitted by the switch.

HEC Errors
Displays the number of Header Error Control Errors.

Total
Displays the tolal number of cells.

Figure 26: ATM Interface Detail View



Token Ring Configuration View

This view provides information on the configuration of the Token Ring application. Access the Token Ring Configuration view in one of the following ways:

- Within the Application view, highlight the MPlusTRAPP Application Icon (page 53) and select Configuration from the Icon Subviews menu.
- Within the Chassis Device view, highlight the Token Ring Label (page 44) and select Configuration from the Icon Subviews menu.

Ring Name
Displays the ASCII name assigned to this ring. This name defaults to *Network n*, where *n* is a unique integer value.

Ring Number
Displays the number of the attached ring. If SPECTRUM cannot determine the number of the ring, a zero is returned.

Ring Speed
Displays the speed of the ring, which has a value of 4 or 16 megabits.

Ring Status
Displays the operational state of the ring.

Ring Configuration

Opens the TR Ring Configuration View (page 76).

Ring Security

Opens the Token Ring Security Configuration View (page 78).

Alarms Table

Opens the Token Ring Station Alarm Thresholds View (page 87).

Continued...

Port Configuration

This section of the Token Ring Configuration view provides the following information :

Station Ports ON Out Of
Defines the total number of enabled station ports on the addressed module.

Enable All Station Ports

Allows you to enable all the station ports in this port group by setting the value to Enable. The default value is NoEnable.

Ring Ports ON Out Of
Displays the total number of enabled ring in/ring out ports in this port group.

Enable All Ring Ports

Allows you to enable all the ring ports in this port group by setting the value to Enable. The default value is NoEnable.

Host Configuration

This section of the Token Ring Configuration view provides the following information:

Commands
Allows you to send commands to the device. Possible commands are HardwareReset, SoftwareReset, Open, and Close. The default value is NoOperation.

Error Report Timer
Displays the time interval in which the host adapter reports errors to the ring error monitor.

Open Status
Displays the status of the device, or errors it has received, with respect to insertion into the ring.

Active Monitor Contention
Allows you to prohibit the possibility of the device becoming the active monitor for the ring by setting the proper Allowed or NotAllowed status.

Continued...

Host Error Status

This box in the Host Configuration section of the Token Ring Configuration view provides a series of read-only indicator buttons detailing the last error status returned by the Device.

TR Ring Configuration View

This view provides configuration information on the ring the ports are attached to. To access this view, click the Ring Configuration (page 73) button in the Token Ring Configuration View (page 73).

Ring Configuration

This section of the TR Ring Configuration view displays the following information:

Ring Name
Displays the ASCII name assigned to this ring. This name defaults to *Network n*, where *n* is a unique integer value.

Ring Number
Displays the number of the attached ring. If SPECTRUM cannot determine the number of the ring, a zero is returned.

Ring Speed
Displays the speed of the ring, which can have a value of 4 or 16 megabits.

Ring Status
Displays the operational state of the ring.

Active Monitor
Displays the MAC address of the active monitor for the ring. This address will appear in any tables with an asterisk (*) to identify it.

Active Stations
Displays the number of active stations currently inserted on the ring.

Beacon Recovery
Provides a button, allowing you to Enable or Disable automatic beacon recovery for the TR MicroLAN Switch Module. When Disabled, the TR MicroLAN Switch Module will not attempt to reinsert itself into the ring after entering a beaconing state. If the device does not support automatic beacon recovery, SPECTRUM will display a status of Invalid.

Ring Alarm/Threshold/State

This section of the TR Ring Configuration view has three columns, displaying information on the ring alarms, their current thresholds, and their states (Enabled or Disabled).

Ring Purges
Allows you to set a value for the Ring Purges alarm threshold, and the state button allows you to Enable or Disable detection of this alarm.

AMP Errors
Allows you to set a value for the Active Monitor Error alarm threshold, and the state button allows you to Enable or Disable detection of this alarm.

Claim Token Errors
Allows you to set a value for the Claim Token Errors alarm threshold, and the state button allows you to Enable or Disable detection of this alarm.

Lost Frames
The threshold field allows you to set a value for the Lost Frames alarm threshold, and the state button allows you to Enable or Disable detection of this alarm.

Token Errors
Allows you to set a value for the Token Errors alarm threshold, and the state button allows you to Enable or Disable detection of this alarm.

Beacon State
Allows you to set a value for the Beacon State alarm threshold, and the state button allows you to Enable or Disable detection of this alarm.

Frame Count
Allows you to set a value for the Frame Count alarm threshold, and the state button allows you to Enable or Disable detection of this alarm.

Ring Timebase
Allows you to set the timebase used for getting and setting all alarms pertaining to this ring. This value is measured in seconds.

Token Ring Security Configuration View

This view provides information on the security configuration for the ring. To access this view click the Ring Security (page 73) button in the Token Ring Configuration View (page 73).

Ring Name
Displays the ASCII name assigned to this ring. This name defaults to *Network n*, where *n* is a unique integer value.

Ring Number
Displays the number of the attached ring. If SPECTRUM cannot determine the number of the ring, a zero is returned.

Ring Status
Displays the operational state of the ring.

Ring Speed
Displays the speed of the ring, which can have a value of 4 or 16 megabits.

Administration State
EnabledWithAlarm - generates an alarm upon insertion of an illegal station into the ring.

EnabledWithRemoveAndAlarm - generates an alarm and also removes the illegal station from the ring. Selecting Disabled turns off security.

Total Allowed Stations
Displays the total number of stations in the *Allowed Stations* list.

Continued...

Allowed Station Address Table

This table contains a list of addresses and interface numbers for the stations allowed on the ring. The active monitor for the ring is indicated by an asterisk (*) beside the address. Double-clicking a table entry opens the Modify Allowed Station List View (page 95). This table has the following buttons:

Update

Allows you to update the contents of the Station Address Table.

MAC/Canonical

Affects the display of the station addresses, toggling the format between MAC (Physical) and Canonical. The button displays the format not currently selected.

Set/Clear Filter

Allows you to set a filter affecting the stations displayed in the table. You select an attribute to filter against by clicking one of the column heading buttons.

Sort Up/Sort Down/Un-Sort

Allows you to sort the stations displayed in the table. You select an attribute to sort on by clicking one of the column heading buttons.

Modify Allowed Station List

Opens the Modify Allowed Station List View (page 95).

Token Ring Station Table View

This view displays a Station Table containing information for all stations directly connected to the ring. It also displays buttons which manipulate the information in the table, and buttons to access other views. To access the this view highlight the MPlusTRApp Application Icon (page 53) and select **Stations** from the **Icon Subviews** menu.

Ring Name
Displays the ASCII name assigned to this ring. This name defaults to *Network n*, where *n* is a unique integer value.

Ring Number
Displays the number of the attached ring. If SPECTRUM cannot determine the number of the ring, a zero is returned.

Ring Speed
Displays the speed of the ring, which can have a value of 4 or 16 megabits.

Ring Status
Displays the operational state of the ring.

Active Monitor
Displays the MAC address of the active monitor for the ring. This address will appear in any tables with an asterisk (*) to identify it.

Station Address
Displays the MAC address of the station to which this information pertains.

Station Name
Displays the ASCII name assigned to this station.

Frames
Displays the total number of frames that have been received/generated by this station.

Errors
Displays the total number of errors that this station has detected on the ring.

Port
Displays the number of the port on the token ring module to which this station is connected.

Continued...

Update

Updates the contents of the Station Table.

Totals/Deltas

Totals displays the statistics as totals since the Module was initialized. Deltas displays the difference between the current value and the value at the time of the last update.

MAC/Canonical

Displays the station addressed between MAC (Physical) and Canonical (Token Ring). The format NOT currently selected .

Set Filter/Clear Filter

Set Filter Opens the Filter Dialog box for the selected column of the Station table. Type a character string to search the columnClear Filter returns the Station table to its normal state.

Sort Up/Sort Down/Unsort

Sort Up organizes the list within a selected column form the lowest alphanumeric value to the highest. Sort Down organizes the list within a selected column form the highest alphanumeric value to the lowest. Unsort returns the fields to its normal state.

Isolating Errors Table

Opens the Token Ring Station Isolating Errors View (page 82).

Alarms Table

Opens the Token Ring Station Alarm Thresholds View (page 87).

Station Detail

Opens the Token Ring Station Detail View (page 90).

Station Alarms

Opens the Station Alarms Dialog Box (page 92).

Remove Station

Allows you to remove the selected station from the ring.

Token Ring Station Isolating Errors View

This view displays an Isolating Errors Table containing information for all stations directly connected to the ring. To access the this view, do the following:

- Within the Application view, highlight the MPlusTRApp Application Icon (page 53) and select Station Errors from the Icon Subviews menu.
- Click the Isolating Errors Table (page 81) button in the Token Ring Station Table View (page 80).

This view provides the following information:

Ring Name
Displays the ASCII name assigned to this ring. This name defaults to *Network n*, where *n* is a unique integer value.

Ring Number
Displays the number of the attached ring. If SPECTRUM cannot determine the number of the ring, a zero is returned.

Ring Speed
Displays the speed of the ring, which can have a value of 4 or 16 megabits.

Ring Status
Displays the operational state of the ring.

Active Monitor
Displays the MAC address of the active monitor for the ring. This address appears in all tables with an asterisk (*) to identify it.

Station Address
Displays the MAC address of the station to which this information pertains.

Station Name
Displays the ASCII name assigned to this station.

Line
Displays the number of line errors that this station has detected on the ring.

Continued...

Burst
Displays the number of burst errors that this station has detected on the ring.

A/C
Displays the number of address/copied errors that this station has detected on the ring.

Abort
Displays the number of abort sequences that this station has sent.

Internal
Displays the number of internal errors that this station has detected.

Update

Updates the contents of the Token Ring Station Isolating Errors Table.

Totals/Deltas

Affects the display of statistical information. Selecting Totals displays the statistics as totals since the TR MicroLAN Switch Module was initialized. Selecting Deltas displays the difference between the current value and the value at the time of the last update. The button displays the format currently selected.

MAC/Canonical

This button affects the display of the station addressed, toggling between MAC (Physical) and Canonical (Token Ring). This button displays the format NOT currently selected.

Set Filter/Clear Filter

Set Filter Opens the Filter Dialog box for the selected column of the Station table. Type a character string to search the column

Clear Filter returns the Station table to its normal state.

Sort Up/Sort Down/Unsort

Sort Up organizes the list within a selected column form the lowest alphanumeric value to the highest.

Sort Down organizes the list within a selected column form the highest alphanumeric value to the lowest.

Unsort returns the fields to its normal state.

Continued...

Non-Isolating Errors Table

Opens theToken Ring Station Non-Isolating Errors View (page 85).

Alarms Table

Opens the Token Ring Station Alarm Thresholds View (page 87).

Station Detail

Opens the Token Ring Station Detail View (page 90).

Station Alarms

Opens the Station Alarms Dialog Box (page 92).

Remove Station

Removes the selected station from the ring.

Token Ring Station Non-Isolating Errors View

This view displays information for all stations directly connected to the ring. To access this view, click the Non-Isolating Errors Table (page 84) button in the Token Ring Station Isolating Errors View (page 82).

Ring Name
Displays the ASCII name assigned to this ring. This name defaults to *Network n*, where *n* is a unique integer value.

Ring Number
Displays the number of the attached ring. If SPECTRUM cannot determine the number of the ring, a zero is returned.

Ring Speed
Displays the speed of the ring, which can have a value of 4 or 16 megabits.

Ring Status
Displays the operational state of the ring.

Active Monitor
Displays the MAC address of the active monitor for the ring. This address will appear in any tables with an asterisk (*) to identify it.

Station Address
Displays the MAC address of the station to which this information pertains.

Station Name
Displays the ASCII name assigned to this station.

Lost Frames
Displays the number of lost frames that this station has detected on the ring.

Congestions
Displays the number of congestion errors that have occurred at this station.

FrameCopied
Displays the number of frame copied errors that this station has detected on the ring.

Token
Displays the number of token errors that this station has detected on the ring while it was acting as the active monitor.

Frequency
Displays the number of frequency errors that this station has detected on the ring.

Continued...

Update

Updates the contents of the Token Ring Station Non-Isolating Errors Table.

Totals/Deltas

Affects the display of statistical information. Selecting Totals displays the statistics as totals since the TR MicroLAN Switch Module was initialized. Selecting Deltas displays the difference between the current value and the value at the time of the last update. The button displays the format currently selected.

MAC/Canonical

This button affects the display of the station addressed, toggling between MAC (Physical) and Canonical (Token Ring). This button displays the format NOT currently selected.

Set Filter/Clear Filter

Set Filter Opens the Filter Dialog box for the selected column of the Station table. Type a character string to search the column

Clear Filter returns the Station table to its normal state.

Sort Up/Sort Down/Unsort

Sort Up organizes the list within a selected column form the lowest alphanumeric value to the highest.

Sort Down organizes the list within a selected column form the highest alphanumeric value to the lowest.

Unsort returns the fields to its normal state.

Alarms Table

Opens the Token Ring Station Alarm Thresholds View (page 87).

Station Detail

Opens the Token Ring Station Detail View (page 90).

Station Alarms

Opens the Station Alarms Dialog Box (page 92).

Remove Station

Removes the selected station from the ring.

Token Ring Station Alarm Thresholds View

This view displays information for all stations directly connected to the Token Ring. To access this view, click the following :

- Alarms Table (page 73) button in the Token Ring Configuration View (page 73)
- Alarms Table (page 84) button in the Token Ring Station Table View (page 80)
- Alarms Table (page 86) button in the Token Ring Station Non-Isolating Errors View (page 85)

Ring Name
Displays the ASCII name assigned to this ring. This name defaults to *Network n*, where *n* is a unique integer value.

Ring Number
Displays the number of the attached ring. If SPECTRUM cannot determine the number of the ring, a zero is returned.

Ring Speed
Displays the speed of the ring, which can have a value of 4 or 16 megabits.

Ring Status
Displays the operational state of the ring.

Active Monitor
Displays the MAC address of the active monitor for the ring. This address will appear in any tables with an asterisk (*) to identify it.

Station Address
Displays the MAC address of the station to which this information pertains.

Station Name
Displays the ASCII name assigned to this station.

Line
Displays the threshold setting for line errors on the device.

Continued...

Burst
Displays the threshold setting for burst errors on the device.

A/C
Displays the setting for address/copied errors on the device.

Internal
Displays the threshold setting for internal errors on the device.

Congestions
Displays the threshold setting for congestion errors.

Update

Updates the Station Alarm Thresholds Table.

MAC/Canonical

Toggles between MAC (Physical) and Canonical (Token Ring).

Set Filter/Clear Filter

Set Filter opens the Filter Dialog box for the selected column of the Station table. Type a character string to search the column .

Clear Filter returns the Station table to its normal state.

Sort Up/Sort Down/UnSort

Sort Up organizes the list within a selected column form the lowest alphanumeric value to the highest.

Sort Down organizes the list within a selected column form the highest alphanumeric value to the lowest.

Unsort returns the field to its normal state.

Alarm States Table

Opens the Token Ring Station Alarm States View, which provides the same button functions and fields as the Token Ring Station Alarm Thresholds View (page 87), but displays information on the state of each alarm threshold (Enabled or Disabled).

Station Detail

Opens the Token Ring Station Detail View (page 90).

Continued...

Station Alarms

Opens the Station Alarms Dialog Box (page 92).

Remove Station

Allows you to remove the selected station from the ring.

Token Ring Station Detail View

This view includes three color-coded pie charts presenting a breakdown of token ring application statistics. Each statistic is presented as a total amount since the device was initialized and as a percentage of overall traffic. To access this view click the:

- Station Detail (page 81) button in the Token Ring Station Table View (page 80)
- Station Detail (page 84) button in the Token Ring Station Isolating Errors View (page 82)
- Station Detail (page 88) button in the Token Ring Station Alarm Thresholds View (page 87)

Station Address
Displays the MAC address of the station for which the information in this table pertains.

Configure Station Alarms

Opens the Token Ring Station Alarms Configuration View, which allows you to change the threshold value and state of the station for the Line, Burst, A/C, Internal, and Receive Congestion errors.

Station Name
Displays the ASCII name assigned to this station.

Station Port
Displays the number of the port on the token ring module to which this station is connected.

Station Removal
Allows you to modify the removal state of the station and displays the last request made of the device. Remove causes the station to remove itself from the ring, NotRemovable disables removal from the ring, and DoNotRemove is the default setting and does not affect the station.

Upstream
Displays the MAC address of the device (neighbor) immediately upstream of the station on the ring.

Downstream
Displays the MAC address of the device (neighbor) immediately downstream of the station on the ring.

Station Priority
Displays the station's maximum access priority.

Continued...

Pie Charts

Table 24 through Table 26 list the statistics and definitions for each of the pie charts displayed in this view.

Table 24: Frame Breakdown Pie Chart

Statistic	Definition
Frames	The total frames detected on this station or ring.
Errors	The total errors detected by this station or ring.

Table 25: Non-Isolating Errors Pie Chart

Statistic	Definition
Lost Frames	The total times a station has had its Token Ring Rotation (TRR) timer expire trying to transmit.
Congestions	The total times a station recognizes a frame addressed to it, but the station has no available buffer space.
Frame Copied	The total times a station recognizes a frame addressed to it, and detects that the FS field A bits are set to 1.

Table 25: Non-Isolating Errors Pie Chart

Statistic	Definition
Token	The total times the station acting as active monitor recognizes an error condition requiring a token be transmitted.
Frequency	The total frequency errors on this ring.

Table 26: Isolating Errors Pie Chart

Statistic	Definition
Line	The total line errors that have occurred on this ring.
Burst	The total burst errors that have occurred on this ring.
A/C	The total address/copied errors that have occurred on this ring.
Abort Sequence	The total abort sequences transmitted on this ring.
Internal	The total internal errors detected by a station on this ring.

Station Alarms Dialog Box

The Station Alarms dialog box allows you to read, display, and modify the alarm settings for a single station or list of stations. The list displays the stations that were on the ring at the time the dialog box was opened. You can read and modify the settings to a valid station that does not appear in the list and was added after opening the view by entering its address in the Station field. To access this dialog box click the:

- Station Alarms (page 81) button in the Token Ring Station Table View (page 80)
- Station Alarms (page 84) button in the Token Ring Station Isolating Errors View (page 82)

Station
Displays the address of the current station. You can enter the address of a valid station in this field to make it the current station.

Alarm
Lists the threshold alarms that can be manipulated. The alarms in this column include Line, Internal, Burst, A/C, and Congestion.

Threshold
Displays the current setting for each corresponding alarm threshold. You can change the values by selecting the field and editing the number.

- Station Alarms (page 89) button in the Token Ring Station Alarm Thresholds View (page 87)

State
Indicates the state of each corresponding alarm threshold (Enable or Disable).

Stations
Displays the MAC addresses of all stations in the ring at the time the dialog box was opened except the current station, which is displayed in the *Apply Settings to* list. Double-clicking on an address in this list moves it to the *Apply Settings to* list.

Apply Settings to
Displays the MAC addresses of all stations to which the threshold settings may be applied. This list always contains the current station's MAC address upon opening the dialog box. Double-clicking on an address in this list moves it to the *Stations* list.

Continued...

>

Moves the selected item from the *Stations* list to the *Apply Settings to* list.

<

Moves the selected item from the *Apply Settings to* list to the *Stations* list.

>>

Moves all of the stations from the *Stations* list to the *Apply Settings to* list. The current station remains at the top of the *Apply Settings to* list if it is a valid station.

<<

Moves all of the stations from the *Apply Settings to* list to the *Stations* list. The current station remains at the top of the *Apply Settings to* list if it is a valid station.

Apply

Applies the threshold settings to the stations listed in the *Apply Settings to* list or the station entered into the *Station* field if the list is empty.

Read

Initiates a read of the threshold settings for the selected station or the station entered into the *Station* field.

Cancel

Exits the dialog box without applying settings to the stations or once you have applied all changes and wish to exit.

Modifying Threshold Settings

To change the threshold settings for one or more stations, follow these steps:

1. Move the addresses of all the stations to be modified to the *Apply Settings to* list. If you are only modifying the current station, this step is not necessary. If you wish to modify a valid station that does not appear in the list, enter its MAC address into the *Station* field. For information on how to move addresses between lists, refer to the buttons described earlier in this section.
2. Select the desired settings to be applied to the current station and all stations in the *Apply Settings to* list by clicking on Enable or Disable for each alarm threshold and typing a value into each *Threshold* field.
3. Click on the Apply button.

If the new alarm thresholds cannot be written to the device due to the device being down, an error message appears and you should try again later.

Reading Thresholds from a Station

To read the current threshold settings from any station, follow these steps:

1. Select the station to be read from the *Stations* or *Apply Settings to* list. If you are reading from the current station, this step is not necessary. If you wish to modify a valid station that does not appear in either list, enter its MAC address into the *Station* field.
2. Click on the Read button. The threshold settings for the selected station are read from the device.

Modify Allowed Station List View

This view allows you to modify the security for the ring by adding or removing stations from the ring's list of allowed stations. To access this view, click the Modify Allowed Station List (page 79) button in the Token Ring Security Configuration View (page 78) view.

Caution:

Do not attempt to modify Ring Security without a complete understanding of Token Ring concepts. Removal of the station acting as the connecting bridge from the Ring Security Allowed Station List can cause isolation from the ring.

Security Administration State

This section allows you to choose the level of security for the ring. You may only select one option at a time. Click on the desired option to select it. The buttons indent to indicate the selected option.

Disable

Disables the ring security. All stations are allowed on the ring.

Enable with Alarm

Enables the ring security, and any station entering the ring will generate an alarm unless it is on the secure list. The device will place the station address on the Allowed Stations list.

Enable with Remove and Alarm

Enables the ring security, and any station not on the secure list that enters or currently resides on the ring will generate an alarm and be removed from the ring.

Allowed Stations

Displays the list of stations currently allowed on the ring. Double-clicking on an item in the list moves it to the Disallowed Stations window. However, you cannot move a station from the

Allowed Stations window if the security is set to Enable with Alarm. A symbol (>) indicates that this station has recently been moved to the Disallowed Stations window from the Allowed Station window, and will remain until the changes are applied.

Disallowed Stations

Acts as a scratch pad or buffer to store addresses currently disallowed on the ring, but you may want to move to the Allowed Stations window in the future. The ring does not read this buffer to deny ring access to certain stations, but rather denies access to all stations not explicitly listed in the Allowed Stations window. Double-clicking on an item in the list will move it to the Allowed Stations window. A symbol (<) indicates that this station has recently been moved to the Allowed Stations window from the Disallowed Station window, and will remain until the changes are applied.

Moves the selected station from the Allowed Stations window to the Disallowed Stations window. A symbol (>) indicates that this station has recently been moved to the Disallowed Stations window from the Allowed Station window, and will remain until the changes are applied. You cannot move a station from the Allowed Stations window if the security is set to Enable with Alarm.

Moves the selected station from the Disallowed Stations window to the Allowed Stations window. A symbol (<) indicates that this station has recently been moved to the Allowed Stations window from the Disallowed Station window, and will remain until the changes are applied.

Allows you to add a new station. The station address must be added in valid hex MAC address form, and valid separators are the colon (:), period (.), and dash (-). You can add the new station to either the Allowed or Disallowed Station window by selecting the appropriate option in the ADD Station dialog box. A symbol (+) indicates that this station has recently been added, and will remain until the changes are applied. Selecting a recently added and still marked (+) station and clicking on the DELETE button will remove it from the window.

Continued...

DELETE

Allows you to remove the selected station (refer to the *CAUTION* earlier in this section). You may remove any station address except that belonging to the device itself, or a station from the Allowed Stations window if the security is set to Enable with Alarm. A symbol (-) indicates that this station has been marked for removal, and will remain until the changes are applied, at which time the station is actually removed from the window. Selecting the station and clicking on the ADD button will remove the symbol (-) and unmark the station for removal. This button will also remove a station marked with the symbol (+).

Delete All Allowed Stations

Allows you to remove all of the stations in the Allowed Stations window (refer to the *CAUTION* earlier in this section). A symbol (-) marks all of the items in the window, indicating that the stations have been designated for removal, and will remain until the changes are applied, at which time the stations are actually removed from the window. This option will remove all station addresses except that belonging to the device itself. Selecting a station and clicking on the ADD button will remove the symbol (-) and unmark that station for removal.

Apply

Applies all changes made to the Allowed and Disallowed Stations windows, writing the list from the Allowed Stations window to the device and from the Disallowed Stations window to SPECTRUM, and removes all indicator markings from the modified stations.

Read

Updates the Allowed and Disallowed Stations windows by reading the saved values from both the device and SPECTRUM. This serves to reset any changes you made to either window but did not apply.

Cancel

Exits from the view. Only changes that have been applied will be saved.

Continued...

Changing the Ring Security State

To change the level of security on the ring, follow these steps:

1. Click on the desired security option.
2. Click on the Apply button and then select OK in the confirmation window.

If the new security state cannot be written to the device, a Cannot Update error message appears. There may be a problem contacting the device, or the firmware may not have updated. Click on the Read button before attempting another update.

Adding Stations

To add stations to the view, do the following:

1. Click on the ADD button. A pop-up dialog box appears.
2. Enter the station address in the text entry field following the guidelines described in the ADD button description earlier in this section.
3. Select the option corresponding to the list you want to add the station to (Allowed or Disallowed) and click Apply.

If the new station cannot be written to the device, a Cannot Update error message appears. There may be a problem contacting the device, or the address you are trying to add to the station's allowed list may already exist. Click on the Read button before attempting another update.

SFCS System Configuration View

This view contains information used to set up and configure each Virtual Switch. It contains the following information:

Admin Status
Sets the administrative state of the Secure Fast Cell Switching (SFCS) services for this virtual switch. This controls the SFCS state at a chassis level. Regardless of the per-interface state of each SFCS switching element and the state of active connections, writing the value `disabled` causes the entire switch to immediately shutdown.

Oper Status
Indicates the current operating condition of this switch. Possible values are described in Table 27.

Table 27: Operating Status Values

Value	Description
enabled	running
disabled	not running
pending-disable	shut-down in progress
pending-enable	start-up in progress
invalid-config	not running, invalid configuration

Table 27: Operating Status Values

Value	Description
other	none of the above

Oper Time
Indicates the amount of time that this switch system has been in its current operational state.

Last Change
Indicates the last time a change was made to the configuration entry for this switch.

Switch Capacity
Indicates the maximum capacity of the switch in megabytes.

Max Cnx Entries
Indicates the maximum number of connections which can be established on this switch.

Continued...

Max Stat Entries
Indicates the maximum number of stats enabled VCs for this switch.

Max UPC Entries
Indicates the maximum number of UPC enabled VCs for this switch.

Firmware Version
This is the Firmware Version of the switch.

ANIM Count
Indicates the number of ATM Network Interface Modules (ANIMs) currently configured on this switch.

Interface Capability
Indicates the total bandwidth capability (transmit and receive) for this switch expressed in Mbps.

Type of Switch
Indicates what type of switch this is. Possible values are `sfcellswitch`, `sfpacketswitch`, and `other`.

Policing Support
Indicates whether this switch supports policing.

CTM Slot Mask
This is the slot mask for all CTM boards in the chassis. The least significant bit represents slot 1.

PNNI NSAP Prefix
This is the 13-byte Network Server Access Point (NSAP) prefix to use with address registration.

PNNI Node Level
This is the PNNI node level value. The range can be from 0 to 104.

PNNI Addressing Mode
This is the PNNI addressing mode. Possible modes are listed in Table 28.

Table 28: PNNI Addressing Modes

Mode	Description
automode-MAC	address configured automatically, based on MAC address
automode-board	address configured automatically, based on board number
manual	address configured manually

PNNI Addressing Admin Status
Displays the the PNNI addressing administrative status.

SFCS System Status View

This table contains the objects that pertain to the operational status of a Virtual Switch. It provides the following:

TDM Cell Count
Indicates the total number of cells being transferred across the Time Division Multiplexing (TDM) backplane for the entire switch.

Currrent UPC Entries
Indicates the current number of Usage Parameter Control (UPC) entries for this switch.

TDM Utilization
Indicates the total percentage of TDM utilization for the switch.

Current Stat Entries
Indicates the current number of statistics entries for this switch.

Current Connection Entries
Indicates the current number of connection entries for this switch.

SFCS System System Configuration View

The following information pertains to the setup and configuration of the Virtual Switch.

Admin Reset
Resets this Virtual Switch. Writing a value of `reset` will force a restart of the entire switch, without any graceful shutdown. Any active connections or services will be interrupted.

ATOM Persistence
This enables or disables ATOM mib persistence.

VC Size
This entry is the size of Virtual Connections (VCs) allocated for all Virtual Paths (VPs) in the switch.

Power Up Diagnostics
This enables or disables power-up diagnostics.

SFCS Module Configuration Table View

This table contains the configuration and administrative information for each SFCS module. It provides the following:

Slot
The primary index to the SFCS switch table. This identifies the chassis slot number for this switch module.

Admin Status
Sets the administrative state of the SFCS switching services for this SFCS module. This controls the SFCS state at a module level. Regardless of the per-interface state of each SFCS switching interface and the state of active connections. Writing the value `disabled` will cause the SFCS to immediately shutdown. A graceful shutdown will be attempted.

Oper Status
Indicates the current operating condition of the SFCS module.

Oper Time
Indicates the amount of time that this SFCS module has been in its current operational state.

Last Change
Indicates the last time a change was made to the configuration entry for this SFCS switch module.

SFCS MIB Version
Indicates the current version, expressed as an integer, of the SFCS MIB for this switch module.

SFCS MIB Rev
Indicates the current revision level of the Cabletron SFCS MIB for this switch module.

Switch Host Port
Indicates the switch port that is attached to the host.

Host Ctrl ATM Address
Indicates the ATM address of the host.

Switch Capacity
Indicates the maximum bandwidth based on the current configuration of the switch module.

Continued...

Max Cnx Entries
Indicates the maximum number of connections which can be established on this switch module.

Max Stat Entries
Indicates the maximum number of stats enabled VCs for this switch module.

Max UPC Entries
Indicates the maximum number of UPC enabled VCs for this switch module.

Number of ANIMS
Indicates the number of ATM Network Interface Modules (ANIMs) currently configured on this switch module.

Bw Capability
Indicates the total bandwidth capability for this switch engine, expressed in Mbps.

SFCS Module StatusTable View

This table contains the status information for each SFCS switch module. It provides the following:

Slot Index
Displays the primary index to the SFCS switch table. This identifies the chassis slot number for this SFCS module.

TDM Cell Count
Indicates the total number of cells being transferred across the TDM backplane for this switch module.

TDM Utilization
Indicates the percentage of TDM utilization for this switch module.

Curr Cnx Entries
Indicates the current number of connection entries for this switch module.

Curr UPC Entries
Indicates the current number of UPC entries for this switch module.

Curr Stats Entries
Indicates the current number of statistics entries for this switch module.

Curr CTM Agent
Indicates the current board number.

Module UPC Table View

This table contains the Usage Parameter Control information for this SFCS module. It provides the following:

Slot Index
Displays the primary index to the SFCS switch table. This identifies the slot number for this SFCS module.

Admin Status
Sets the administrative state of the SFCS module's UPC engine.

Oper Status
Indicates the operational state of the SFCS module's UPC engine.

Oper Time
Indicates the amount of time that the UPC engine has been active for this switch module.

Reset
Resets the UPC engine for this SFCS module.

Statistics Engine Table View

This table contains information for the Statistics engine for a particular switch module. It provides the following:

Slot Index
Displays the primary index to the SFCS stats engine table. This identifies the chassis slot number for this SFCS module.

Admin Status
Sets the administrative state of the SFCS switch statistics engine. Writing a value of `enabled` causes these counters to become active for this SFCS switch instance. Writing a value of `disabled` causes these counters to become inactive for this SFCS module.

Oper Status
Indicates the operational state of the SFCS switch statistics engine for this switch module.

Oper Time
Indicates the amount of time that the SFCS switch statistics have been active for this switch module.

Reset
Resets the SFCS switch counters for this SFCS module. Writing a value of `reset` resets the SFCS switch counters to 0 and causes **`Oper Time`** to also be reset to 0.

ANIM Configuration Table View

This table contains the managed objects used to set up and configure each SFCS ANIM. It contains the following:

ANIM Index
Specifies the ATM Network Interface Module (ANIM) with which you are dealing.

Admin Status
Sets the administrative state of the SFCS switch ANIM.

Oper Status
Indicates the operational state of the SFCS switch ANIM for this SFCS ANIM instance.

ANIM Type
Indicates the type of physical interface for this ANIM.

Number of Ifs
Indicates the number of operational interfaces for this ANIM.

Line Rate
Indicates the line rate per port, in Mbps, for this ANIM.

ANIM Status Table View

This table contains the managed objects used to keep track of, transmit, and receive counts and bandwidth for each SFCS ANIM.

ANIM Index
A unique value that specifies the ANIM with which you are dealing.

Rx Cells
Indicates the number of cells received from this ANIM's interfaces.

Tx Cells
Indicates the number of cells transmitted from this ANIM's interfaces.

Interface Configuration Table View

This table contains the managed objects used to set up and configure each SFCS switching interface.

If Index
Specifies the interface with which you are dealing.

Buffers Allocated
Indicates the number of cells in transmit buffer memory.

Queue Count
Indicates the number of priority queues configured on this interface.

Sig Stack Id
Indicates the user signalling stack ID for this interface.

Clocking From Mother Board
The ANIM clocking source from the mother board. Possible values are: localanimclock, motherboardMasterClock, recoveredclock, and notSupported.

Clocking To Mother Board
The ANIM clocking source to the mother board. Possible values are : localAnimClock,channelRecoveredClockFromPort1, channelRecoveredClockFromPort2, channelRecoveredClockFromPort3, channelRecoveredClockFromPort4, channelRecoveredClockFromPort5, channelRecoveredClockFromPort6, and notSupported.

Interface Statistics Table View

This table contains the objects that specify the packet and byte counters for each configured SFCS switching interface. It provides the following:

If Index
A unique value identifying the interface with which you are dealing.

Rx Errors
Indicates the number of receive path lookup invalid and out of range errors.

VPI Lookup Invalid Errors
Indicates the number of Virtual Path Identifier (VPI) lookup invalid and out of range errors.

Rx Cnx Lookup Invalid Errors
Indicates the number of receive connection lookup invalid errors.

Rx Cell Count
Indicates the number of receive cells on this interface.

Tx Cell Count
Indicates the number of transmit cells on this interface.

Overflow Dropped Cell Count
Indicates the number of cells that were dropped due to queue overflows.

Connection Configuration Table View

This table contains the connection configuration information.

Index
Displays a unique value used to identify this cross-connect.

Low If Index
Displays the value of this object that is equal to the low MIB II `IfIndex` value of the ATM interface port for this cross-connect.

Low VPI
Displays the value of this object that is equal to the low VPI value at the ATM interface associated with the cross-connect that is identified by Index.

Low VCI
Displays the value of this object that is equal to the low VCI value at the ATM interface associated with this cross-connect that is identified by Index.

High If Index
Displays the value of this object that is equal to the high MIB II `IfIndex` value of the ATM interface port for this cross-connect.

High VPI
Displays the value of this object that is equal to the high VPI value at the ATM interface associated with the cross-connect that is identified by Index.

High VCI
Displays the value that is equal to the high VCI value at the ATM interface associated with this cross-connect that is identified by Index.

Type
Indicates the connection type for this VC. Possible values are: `point-to-point-vpl`, `point-to-mpoint-vpl`, `mpoint-to-mpoint-vpl`, `point-to-point-vcl`, `point-to-mpoint-vcl`, and `mpoint-to-mpoint-vcl`.

TM Type
Indicates the type of traffic management used on this VC. Possible values are `er`, `efci`, and `other`.

Continued...

UPC Enable
Indicates whether UPC policing is enabled on this VC.

Stats Enable
Indicates whether statistics will be kept on this VC.

Stats Table Counter Size
Indicates the size of the drop counter for this VC.

Owner
Indicates the owner of this cross-connect. Possible values are: other, own, and dontown.

Connection Statistics Table

This table contains the connection configuration information. It provides the following:

CC Index
Displays the unique value used to identify this cross-connect.

CC Low If Index
Displays the value of this object that is equal to the low MIB II **IfIndex** value of the ATM interface port for this cross-connect.

CC Low VPI
Displays the value of this object that is equal to the low VPI value at the ATM interface associated with the cross-connect that is identified by **Index.**

CC Low VCI
Displays the value of this object that is equal to the low VCI value at the ATM interface associated with this cross-connect that is identified by **Index**.

CC High If Index
Displays the value of this object that is equal to the high MIB II **IfIndex** value of the ATM interface port for this cross-connect.

CC High VPI
Displays the value of this object that is equal to the high VPI value at the ATM interface associated with the cross-connect that is identified by **Index**.

CC High VCI
Displays the value of this object that is equal to the high VCI value at the ATM interface associated with this cross-connect that is identified by **Index**.

Lo to Hi Tx Cells
Indicates the Low to High transmitted cell count for this connection.

Lo to Hi Dropped Cells
Indicates the Low to High dropped cell count for this connection.

Lo to Hi Tagged Cells
Indicates the Low to High tagged cell count for this connection.

Continued...

Hi to Lo Tx Cells
Indicates the High to Low transmitted cell count for this connection.

Hi to Lo Dropped Cells
Indicates the High to Low dropped cell count for this connection.

Hi to Lo Tagged Cells
Indicates the High to Low tagged cell count for this connection.

Queue Configuration Table View

This group contains the managed objects for maintaining SFCS queues.

If Index
Identifies the interface with which you are dealing.

Queue
The index that specifies the transmit queue with which you are dealing.

Size
Indicates the size of the transmit queue for this queue.

Bandwidth
Indicates the percentage of this interface's bandwidth, utilized by this particular queue.

Clp Drop Threshold
Indicates the queue level to start dropping cells with a Cell Loss Priority equal to one (CLP = 1). This level is expressed as the percentage of this queue's size.

Congestion Threshold
Indicates the level at which to consider this queue congested. This level is expressed as the percentage of this queue's size.

EFCI Low Threshold
Indicates the lower threshold used for EFCI for this queue. This level is expressed as the percentage of this queue's size.

RM Threshold
Indicates the RM queue threshold expressed as a percentage of the queue's size. When this level is hit, a management message is sent to the sender notifying it to slow down.

Queue Statistics Table View

This table contains the statistics information for all queues on the SFCS. It provides the following:

If Index
A unique value that identifies the interface with which you are dealing.

Queue
Displays the index that specifies the queue with which you are dealing.

Tx Cells Discarded
Indicates the number of cells with CLP=1 that were discarded.

Tx Cells Dropped
Indicates the number of cells that overflowed the buffer.

Peak Level
Indicates the peak level since last read.

Tx Cells
Indicates the transmit cell count on a per queue basis.

CTM Interface Configuration Table View

This table contains the configuration information of each configured SHEMP interface. It provides the following:

If Index
The unique value that identifies which interface you are dealing with.

Type
Sets the type of interface access attribute for the SFCS interfaces. Possible attributes are described in Table 29.

Table 29: SFCS Attribute Types

Attirbute	Description
accessPort	allow single user or shared access and perform statisics and control
networkPort	equivalent to trunk ports with no access control
hostManagement Port	indicates the (virtual) port to which the (internal) management agent is attached
hostControlPort	indicates the port to redirect non-management packets

Buffer Allocated
Indicates the number of cells in transmit buffer memory.

# of Queues
Indicates the number of priority queues configured on this interface.

Sig Stack Id
Indicates the user signalling stack ID for this interface.

Clocking
The anim clocking source. Possible values are generatedTransmitClock, channelRecoveredClock, systemMasterClock, and notSupported.

Next VPI
Indicates the next VPI for this interface.

CTM Interface Statistics Table View

This view contains the objects that specify the packet and byte counters for each configured SFCS switching interface.

If Index
A unique numeric value that identifies the interface you are dealing with.

Rx Errs
Indicates the number of receive path lookup invalid and out of range errors.

VPI Lookup Invalid Errs
Indicates the number of VPI lookup invalid and out of range errors.

Rx Cnx Lookup Invalid Errs
Indicates the number of receive connection lookup invalid errors.

Allocated Rx BW
Indicates the allocated receive bandwidth.

Allocated Tx BW
Indicates the allocated transmit bandwidth.

Rx Cell Count
Indicates the number of receive cells on this interface.

CTM Queue Configuration Table View

This table contains the CTM configuration information for all queues on the SFCS. It includes the following:

IF Index
A unique value that identifies the interface with which you are dealing.

Queue
The index that identifies the transmit queue with which you are dealing.

Size
Indicates the size of the transmit queue.

Bandwidth
Indicates the percentage of this interface's bandwidth utilized by this particular queue.

Clp Drop Threshold
Indicates the queue level to start dropping CLP=1 cells for this queue. This level is expressed as the percentage of this queue's size.

Congestion Threshold
Indicates the level at which to consider this queue congested. This level is expressed as the percentage of this queue's size.

EFCI Low Threshold
Indicates the lower threshold used for Explicit Forward Congestion Indication (EFCI) for this queue. This level is expressed as the percentage of this queue's size.

RM Threshold
Indicates the Remote Management (RM) queue threshold expressed as a percentage of the queue's size. When this level is hit, a management message is sent to the sender notifying it to slow down.

CTM Queue Statistics Table View

This view contains the statistics information for all queues on the SFCS.

If Index
A unique value that indicates which interface you are dealing with.

Queue
The index that idfentifies the queue with which we are dealing.

Tx Cells Discarded
Indicates the number of cells with Cell Loss Priority equal to one (CLP=1) that were discarded for this queue.

Tx Cells Dropped
Indicates the number of cells that overflowed the buffer for this queue.

Peak Level
Indicates the peak level since last read for this queue.

Tx Cells
Indicates the transmit cell count on a per queue basis.

BW Manager NIM Information Table View

This table contains contains information about the administrative status of the NIM

Nim Index
A unique value that identifies which Network Information Module (NIM) you are dealing with. This reference is in the same format as MIB II's Interface index.

Admin Status
Indicates the administrative status of this NIM.

BW Manager Port Information Table View

This table contains the following information:

Port Index
This index identifies the port with which you are dealing.

Admin Status
Indicates the administrative status of this Port.

Forward Physical Bandwidth
This is the forward physical bandwidth of the port measured in cells per second.

Reverse Physical Bandwidth
This is the reverse physical bandwidth of the port measured in cells per second.

BW Manager Port Pool Limits Table View

This table contains the lowing information:

Port Index
A unique numeric value that specifies which Port you are dealing with.

Pool Index
This index specifies the Pool within the Port that you are dealing with.

Max Allocated Bw Forward
Upper Limit for BW to be allocated in a forward direction. It defaults to the physical BW and is set by administrative action. Can't be set to a value greater than physical BW

Max Allocated Bw Reverse
Upper Limit for BW to be allocated in a reverse direction. It defaults to the physical BW and is set by administrative action. Can't be set to a value greater than physical BW

Bw Allocated Formula
Determines which of three formulas will be used for computing the amount of variable bandwidth to be allocated. Possible values are listed in Table 30.

Table 30: BW Allocated Formula Vlaues

Value	Description
0	Conservative: This allocates the full amount of varibale bandwidth. This is the default value.
1	Moderate: This allocates approximately half of the variable bandwidth.
2	Liberal: This supports very aggresive allocation and should be used with caution.

Bw Constant
A ratio used in formulas for computing the amount of variable bandwidth to be allocated. Valid values are from 1 to 255, which is the numerator of a fraction whose fixed denominator is 256. Thus the value 255 is really 255/256 (the most conservative value) ; the value 1 is really 1/256 (the most liberal value); and the value 128

is really 128/256 (or 50%). The default value is 255.

BW Manager Port Pool Statistics Table View

This table contains the following ionformation:

Port
A unique value that specifies which Port you are dealing with

Pool
This index specifiesthe Pool within the Port that you are dealing with.

Cnx Count Forward
The current total number of calls in the forward direction.

Cnx Count Rev
The current total number of calls in the reverse direction.

Alloc Bw Fwd
The current amount of allocated bandwidth in the forward direction

Alloc Bw Rev
The current amount of allocated bandwidth in the reverse direction

Avail Bw Fwd
The current amount of available bandwidth in the forward direction.

Avail Bw Rev
The current amount of available bandwidth in the reverse direction.

Peak Bw Fwd
The peak amount of allocated bandwidth in the forward direction since the port was initialized or the switch was reset.

Peak Bw Rev
The peak amount of allocated bandwidth in the reverse direction since the port was initialized or the switch was reset.

BW Manager Port Pool Trap Management Table View

This table contains the following information:

Port
A unique value that specifies the port with which you are dealing.

Pool
This index specifies the Pool within the Port that you are dealing with.

Fwd Alloc Bw Upper
The upper threshold for the Alloc BW fwd trap. When an allocation causes the currently allocated bandwidth to exceed this value, a trap is generated.

Rev Alloc Bw Upper
The upper threshold for the Alloc BW revtrap. When an allocation causes the currently allocated bandwidth to exceed this valu,e a trap is generated.

Fwd Alloc Bw Lower
The lower threshold for the Alloc BW fwd trap. When an allocation causes the currently allocated bandwidth to fall below this value, a trap is generated.

Rev Alloc Bw Lower
The lower threshold for the Alloc BW rev trap. When an allocation causes a currently allocated bandwidth to fall below this value, a trap is generated.

Fwd Peak Bw
The upper threshold for the Peak BW fwd trap. When an allocation causes the currently allocated bandwidth to exceed this value, a trap is generated.

Rev Peak Bw
The upper threshold for the Peak BW rev trap. When an allocation causes the currently allocated bandwidth to exceed this value, a trap is generated.

Modeling Considerations

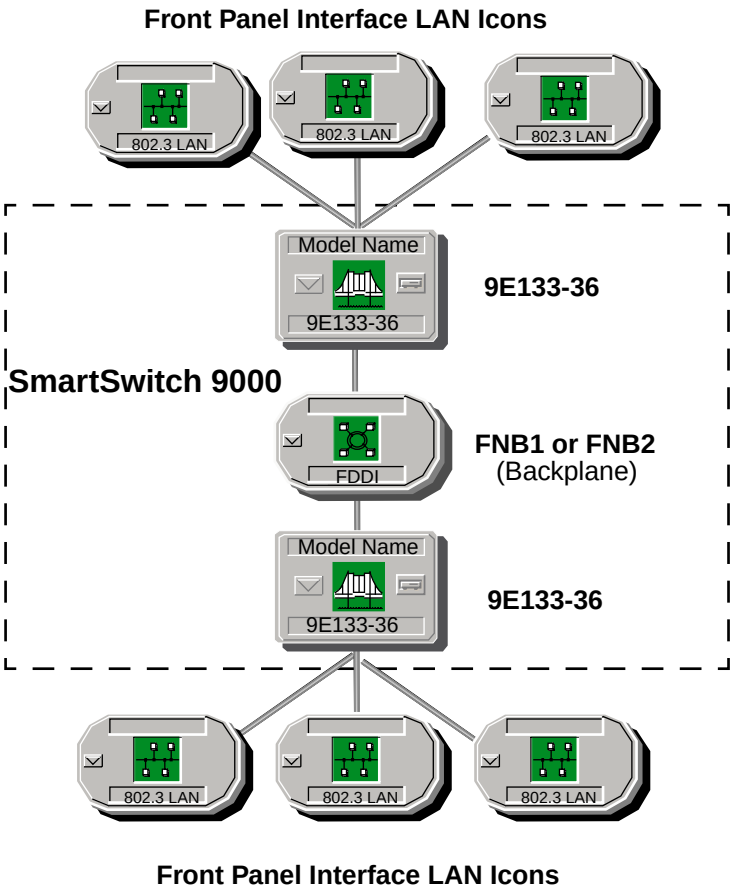
Some conditions apply concerning the placement (modeling) of model types within SPECTRUM views. The following restrictions apply:

- Ethernet devices can be modeled in the Universe Topology view or an 802.3 LAN Topology view
- Token Ring devices can only be modeled in an 802.5 LAN Topology view
- FDDI devices can only be modeled in an FDDI LAN Topology view

Example of a Modeled Network Topology View

The following example shows two 9E133-36 Ethernet MicroLAN Switch Modules and their network connections as displayed in the Topology view in SPECTRUM.

Figure 27: Example SmartSwitch 9000 Topology



Manual Modeling

Summary

Modeling the SmartSwitch 9000 chassis manually in SPECTRUM involves modeling one of the modules contained within the chassis, locating the SmartSwitch 9000 Location icon in the Lost and Found View, creating a Room Location View and copying the SmartSwitch 9000 Location icon to the Room Location View. From the SmartSwitch 9000 Location View icon you can access the views available for the SmartSwitch 9000 Chassis.

Modeling the modules contained in the SmartSwitch 9000 can be done using AutoDiscovery (refer to the *AutoDiscovery User's Guide*) or manually as described in this chapter.

The SmartSwitch 9000 is managed through the icons and views that represent the modules it contains, the Flexible Network Buses (FNB1 and FNB2), the Internal Network Bus (INB), the Environmental Module (EM), and the front panel interfaces.

Preparation and Topology View Definitions

Before modeling the SmartSwitch 9000 , you should be familiar with SPECTRUM's functions as described in the Administration and Operation documentation. You should be familiar with any network management and hardware requirements described in the SmartSwitch 9000 hardware documentation. You will also need to know the IP addresses, MAC addresses, and chassis positions of the modules contained within the SmartSwitch 9000 chassis. A worksheet is provided, for your convenience, to be used during the modeling of your SmartSwitch 9000 and the modules it contains.Use this worksheet to identify the IP address, MAC address, module type, and position of each module. This information will be used to model the modules contained within the SmartSwitch 9000 chassis.

For the purpose of this chapter, the Topology Views are defined as follows:

- Topology View refers to the view that the FDDI LAN (backplane), other networks (frontpanel interfaces), and some modules are modeled in
- FDDI LAN Topology View refers to the view that contains the FddiMAC models that represent the connections to the FNB

Modeling the Chassis

The SmartSwitch 9000 chassis is modeled indirectly using one of the modules it contains. Model one of the modules contained within the chassis as follows:

1. Using a copy of the worksheet provided (Table 31), identify the modules contained in the SmartSwitch 9000 to be modeled.
2. Select one of the modules listed on the worksheet.
3. Refer to Modeling the Modules in the Chassis (page 133) section and model the selected module.

Once the first module has been modeled and an icon representing that module exists, the Chassis icon is automatically created and placed in the Lost &Found View.

Table 31: SmartSwitch 9000 Module Identification Worksheet

ChassisPosition	Module Type	IP Address	MAC Address
Example	9F116-01	192:168:123:45	00:00:12:34:56:78
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

Placing the Chassis Location Icon in the Location View

The Chassis Location icon must be copied into a Room Location View to allow access to the views available from the Location icon. Create a Room Location View as follows:

1. From the View menu select New View > Location.
2. From the File menu select Edit > New Model.
3. Select the desired location (Building, Country, etc.) from the Select Model Type dialog box. Click OK.
4. Enter a Name for the Location View created and a Security String (optional) in the Creating Location dialog box. Click OK.
5. When the icon appears in the Location View, exit the Edit mode.
6. Double-click the icon to open its Location View.
7. Repeat steps 3 through 8 until the Select Model Type dialog box lists the Room Location model type. Create the Room Location model.
8. Locate the Chassis icon in the Lost & Found View as follows:
   a. Select New View from the View menu.
   b. Select Lost & Found from the New View menu.
9. Copy the Chassis Location icon into the Room View as follows:
   a. From the Lost & Found View, select Edit from the File menu.
   b. Select the MMACPlus model type and select Copy from the Edit menu.
   c. Go back to the Room Location View and select Edit from the File menu.
   d. Select Paste from the Edit menu and exit the edit mode.
   e. Return to the Lost & Found View and click the right mouse button to exit the Edit mode. Click the right mouse button to exit the Lost & Found View.

Modeling the Modules in the Chassis

The following instructions are used to manually model modules in the SmartSwitch 9000 . The “Quick Steps” are intended to provide a basic understanding of the process as well as a quick reference for modeling the modules. For more detailed instructions for modeling modules in the SmartSwitch 9000 , refer to the procedures following the “Quick Steps.” To model the modules in the SmartSwitch 9000 using AutoDiscovery, refer to the *AutoDiscovery User’s Guide*.

Quick Steps

1 In the Topology view, create an FDDI LAN model to represent the FNB (FNB1 or FNB2).

Note:

Some modules cannot be modeled in the Universe Topology view. If you attempt to model a module that cannot be modeled at this level, you will get an error message. This indicates that the module must be modeled in the FDDI LAN Topology View described in step 3

2 In the Topology view, model the modules that can be modeled at this level (from the worksheet) that are connected to the FNB (FNB1 or FNB2) you modeled in step 1.

3 Open the FDDI LAN Topology view and model the modules (from the worksheet) that must be modeled at this level (refer to the Modeling the Chassis (page 130) section).

4 If you have RingView for FDDI installed, copy at least one model’s FddiMAC Application icon into the FDDI LAN Topology view and select Current View Information from the Icon Subviews menu. Model the ring using the procedures described in the *RingView for FDDI User’s Guide*.

5 If you do not have RingView for FDDI installed, copy the FddiMAC or GenFDDIMAC Application icon for each module’s model into the FDDI LAN Topology view.

6 Position the FddiMAC or GenFddiMAC icons in a ring in the order described in the Station List for one of the FddiMACs.

7 Connect the FddiMAC or GenFddiMAC icons by drawing pipes between the adjacent icons in the ring.

8 Resolve the adjacent FddiMAC Off-Page Reference icons in the Device Topology views.

Modeling the Flexible Network Bus (FNB)

Model an FDDI LAN to represent the FNB (FNB1 or FNB2) as follows:

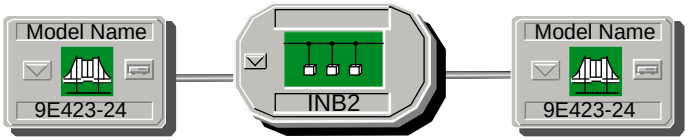
1. In the Topology View, select Edit from the File menu.
2. Select New Model... from the Edit menu.
3. Select FDDI from the Select Model Type dialog box. Click OK.
4. Enter a Name for the FNB to be created and a Security String (optional) in the Creating FDDI dialog box. Click OK.
5. Click the right mouse button to exit the edit mode.

Modeling the Modules Connected to the INB

When modules that are connected to the INB are modeled, the INB is represented by an INB icon. This icon will appear automatically when two or more models are created in SPECTRUM. Model each device using the New Model... or New Model By IP... options. For modeling instructions for those devices also connected to the FNB, refer to Modeling the Modules Connected to the FNB (page 134). The following modules may be connected to the INB within the SmartSwitch 9000 :

- 9F426-08
- 9E423-24

The INB icon representing the physical connection to the INB will appear as shown below



Modeling the Modules Connected to the FNB

Some modules are modeled in the Topology view that contains the FDDI LAN, while others are modeled in the FDDI LAN Topology view (within the FDDI LAN model). The following modules must be modeled in a FDDI LAN Topology view:

- 9F120-08

- 9F122-12
- 9F125-08
- 9F241-12

1 In the Topology view, model the modules listed in the worksheet that are connected to the FNB as follows:

   a Select Edit from the File menu.

   b Select New Model By IP... (used for example) from the Edit menu.

   c Enter the Network (IP) Address (from the work sheet) and the Community String (optional) for the module you wish to model. Click OK.

   d Click on the model's icon with the left mouse button and position the model with respect to the FDDI LAN icon.

   e Repeat steps b through d until all appropriate modules are modeled at this level. Click the right mouse button to exit the edit mode.

2 Double-click the Topology Arrow on the FDDI LAN to open the FDDI Topology view. Model the modules listed in the worksheet not modeled in the Topology view, that are connected to the FNB as follows:

   a In the FDDI Topology view, select Edit from the File menu.

   b Select New Model By IP... (used for example) from the Edit menu.

   c Enter the Network (IP) Address (from the work sheet) and the Community String (optional) for the module you wish to model. Click OK.

   d Click on the model's icon with the left mouse button and position the model.

   e Repeat steps b through d until all remaining modules are modeled in this view.

   f Position the model icons at the top left corner of the FDDI LAN Topology view.

   g Exit Edit mode.

Building the FNB Ring in the FDDI LAN Topology View

The FNB ring displays the FDDI Media Access Controller (FddiMAC) models or GenFddiMAC models representing the connection to the FNB ring on the backplane. To model the ring automatically use the procedure described in the *RingView for FDDI User's Guide*. To build a ring manually you must copy the FddiMAC or GenFddiMAC Application icons from each module's Application view into the FDDI LAN Topology view as follows:

1. From either the Topology view or the FDDI LAN Topology view, highlight a model icon and select Application from the **Icon Subviews** menu or double-click the Application view Label.
2. Copy the FddiMAC Application Icon from the Application view as follows:
   a. Select Edit from the File menu.
   b. Highlight the FddiMAC Application Icon.
   c. Select Copy from the Edit menu.
   d. Exit Edit mode and the Application View.
3. From the Topology view, click the Topology Arrow on the FDDI LAN icon to open the FDDI LAN Topology view.
4. Paste the FddiMAC Application icon into the FDDI LAN Topology View as follows:
   a. Select Edit from the File menu.
   b. Select Paste from the Edit menu.
   c. Drag the FddiMAC or GenFDDIMAC icon to position it in a ring.
   d. Exit Edit mode.
5. Repeat steps 1 through 4 until all modules have a FddiMAC or GenFDDIMAC icon in the FDDI LAN.

Index

Symbols

< Button 93, 96
<< Button 93
> Button 93, 96
>> Button 93

Numerics

9A128_01 9
9A426_02 9
9E1132-15 9
9E133-36 9
9E138-12 9
9E138-36 9
9E423_24 10
9E423_36 10
9E428_12 10
9E428_36 10
9E429_12 10
9E429_36 10
9F106-02 12
9F116-01 12
9F120_08 12
9F122_12 12
9F125_08 12
9F206-02 12
9F241_12 12
9F426 -02 11
9F426-03 11
9G421-02 12
9G426-02 12
9G429-02 12
9H421_12 11
9H422-12 11
9H423_26 11
9H423_28 11
9H429-12 11
9T122-08 13
9T122-24 13
9T125-08 13
9T125-24 13
9T425-16 13

A

A/C 83, 88, 90, 91, 92
A_Port 62
Abort 83
  Sequence 91
Accessing SPECTRUM Views 34
Active
  (ACT) 46
  Monitor 76, 80, 82, 85, 87
    Contention 74
    Error 77
  Stations 76
ADD Button 96
Adding Stations 98
Address
  Canonical 68
  Ethernet 56
  MAC 50, 51, 56
  Mac 58
  Management
    Source 65
  Physical 56
  Source
    Traps 65
Admin Reset 99
Admin Status 57, 99, 103, 106, 107, 108
Administration State 78
Administrative Status
  Bridging Application 51
  Physical Application 50
Administrative Status Label 50
Aging
  Interval 65
Alarm 92
  Configuration 66
  Link Error Rate 63

States Table Button 88
Table Button 73, 81, 84, 86
Alarms
Broadcast 66
Collisions 66
Error 66
Traffic 66
Alignment 67
Allowed Station 95
Address Table 79
AMP Errors 77
ANIM Index 108, 109
ANIM Type 108
Application
ATM (ATMClientApp) 54
Bridging (CSIBridge) 54
Chassis Manager (MMACChasApp) 54
DownLoad (CtDownLoad App) 54
Fast Ethernet (FastEnetApp) 54
FDDI (FddiMAC) 54
MIB-II (SNMP2_Agent) 54
MMACPlus Repeater (MMACPlusRptr) 54
MMACPlus Token Ring (MPlusTRApp) 54
Application Access Label 36, 47
Application Icon 53
Application Label
Icon Subviews 42
Application View 19
Apply
Button 93, 97
Settings to 92
ATM Access Modules 9
ATM Interface Detail View
HEC Errors 72
Received 72
Total 72
Transmitted 72
ATM Network Interface Modules 14
Attribute Walk 44
Auto/Full 28
AutoDiscovery 129, 133
Avail 28

B

B_Port 62
Backplane Device View 27
Backplane Status 25
Beacon 60
Recovery 76
State 77
Blue 46
Bridge
Model Information 42
Performance 42
Bridging Applications 19
Broadcast
Alarms 66
Threshold 66
Buffer Allocated 110
Building
FNB Ring 136
Burst 83, 88, 90, 91, 92
BW 116
Bypassed (BYP) 46

C

C_Wrap
A 61
B 61
S 61
Cancel 93
Button 97
Canonical 68, 79
Button 79
Capacity 99
Change Ring Speed 45
Changing Ring Security State 98
Chassis Device View 26
Chassis Environmental Information 28
Chassis Module Icon 36
Application 41
Application Display 41
Configuration 41
FNB Config View 41
Interface 41
Model Information 41
Reconfigure Model 41

Claim Token Errors 77
Claim/Beacon Process 60
Clear
Filter
Button 79
Climate 28
Close 74
Clp Drop Threshold 116
Cnx Table Size 99, 104
Collision
Alarms 66
Threshold 66
Collisions
Out of Window 67
Commands 74
Component Table 56
Concentrator 68
Isolated 60
Configuration View 70
Address Type 71
Admin Address 71
Conf VCCs 70
Conf VPCs 70
CSIIf Port 52
Device 56
FddiMAC Device 58
Find 71
ILMI VCI 71
ILMI VPI 70
Max VCCs 70
Max VCI Bits 70
Max VPI Bits 70
Neighbor Address 71
Neighbor If Name 71
Sort 71
Configuration Views 20
Configure Station Alarms Button 90
Confirguration View
Max VPCs 70
Congestion Threshold 116
Congestions 85, 88, 91, 92
Connecting
Bridge 95
Connection Entries 101, 105
Contact
Status 56
Container View 20
Copy 132
C-ports 13
CRC 67
Create Model By IP Address Dialog Box 135
Creating Location dialog box 132
CSIIfPort
Configuration 57
Current CTM Agent 105
Current MAC Path 58
Current View Information 133
Cyclical Redundancy Checks 67

D

Dedicated Token Ring. *See* DTR
Delete
All Allowed Stations Button 97
Button 97
Deltas Button 81, 83, 86
Detect 60
Device Configuration View 56
FddiMAC 58
Device Topology View 32
Device Views 22
Diag Pwr Bus 29
Directed 60
Disable 77, 88, 92, 95
Disabled 78
(DIS) 46
Disallowed Stations 96
DoNotRemove 90
DownLoad Application 56
Downstream 90
DTR (Dedicated Token Ring) 13

E

Enable 74, 77, 88, 92
All Ring Ports 74
All Station Ports 74
With Alarm 95
With Remove and Alarm 95
Enable/Disable
Ethernet Port (Admin Status) 57
FDDI Port 44
Token Ring Port 46

Enabled (ENB) 46
EnabledWithAlarm 78
EnabledWithRemoveAndAlarm 78
Engine Reset 107
Environmental Device View 28
Environmental Module 129
Environmental Module
Information 23
ERCI Low Threshold 116
Error 63, 80, 91
Alarms 66
Monitor Count
Link 62
Monitor Reject Count
Link 63
Rate Alarm
Link 63
Rate Cutoff
Link 63
Rate Estimate
Link 62
Report Timer 74
Source 67
Threshold 66
Ethernet MicroLAN Switch
Modules 9
Ethernet SmartSwitch INB 2
Modules 10
Ethernet SmartSwitch INB
Modules 10

F

F 28
F1 28
Fan Status/Speed 28
Fast Ethernet INB Modules 11
FDDI
Configuration 43
Icon Subviews Menu
Selections 43, 44
MAC
Device Configuration
View 58
Model Information 43
Node Classes 68
Performance 43
Station List 43
FDDI LAN Topology View 130
FDDI MicroLAN Modules 12
FDDI Port Labels 43
FDDI Repeater Modules 12
FDDI Ring Label 43
FDDI SmartSwitch Modules 11
FDDI Switch Module 12
FddiMAC 133, 136
FddiMAC Device Configuration
View 58
Firmware
Revision 56
Flexible Network Bus 8
Flexible Network Buse 129
FNB
Configuration View 57
FNB 1 and FNB 2 Icons 49
FNB 1/FNB 2 25
Frame
Copied 91
Count 77
Frame Rate Label 43, 45
Frame Size
Maximum 56
FrameCopied 85
Frames 80, 91
Frequency 85, 91

G

Gauge
Logical 50, 51
Gauge Label 51
GenFDDIMAC 133, 136
Giants 67
Gigabit Ethernet SmartSwitch
Modules 12
Gray 46
Green 46

H

Hardware
Reset 74
HEC Errors 72

Hi to Lo Dropped Cells 115
Hi to Lo Tagged Cells 115
Hi to Lo Tx Cells 115
High If Index 112, 114
High VCI 112, 114
High VPI 112, 114
Host
  Configuration 74
  Error Status 75
Host Ctrl ATM Address 103
Humidity 28

I

Icon
  Application 53
  ATM Chassis Module 40
  Backplane Module 46
  Chassis Module 36
  Ethernet Chassis Module 37
  FDDI Chassis Module 38
  Interface 50
  Token Ring Chassis Module 39
Icon Subviews 55
Icon Subviews Menu
  Application Label 42
  Chassis Module 41
  FDDI Port Label 44
  FDDI Ring Label 43
  Interface 52
  Interface Label 42
  Token Ring Label 45
Icons 36
IF Description 57
If Index 110, 111, 116, 117
IN.OUT Header Support 100
INB
  definition 11
INB 1 and INB 2 Icons 49
INB 1/ INB 2 25
INB 1/INB 2 25
INB Term 29
INB1/INB2 25
INB2 11
In-Band ATM Support 128
Index 56, 112, 114, 116
Initial (INIT) 46
Inserted (INS) 46
Interface
  Icon 50
  Index 57
  Number 50
  Type 57
Interface Capability 100
Interface Configuration Table 56
Interface Device View 31
Interface Labels 36
Interface Number Label 50
Interface Status Label 36
Interface Type and Number Label 36
Internal 83, 88, 90, 91, 92
Internal Network Bus 8, 129
Isolated 61
Isolating Errors Table Button 81

L

Last Change 99, 103
Line 82, 87, 90, 91, 92
Line Rate 108
Link
  Error
    Monitor
      Count 62
      Reject Count 63
    Rate
      Alarm 63
      Cutoff 63
      Estimate 62
  Traps 65
Lo to Hi Dropped Cells 114
Lo to Hi Tagged Cells 114
Lo to Hi Tx Cells 114
Local
  A 61
  AB 61
  B 61
  S 61
Logical
  FDDI
    Icon Subviews Menu Selections 44
Lost Frames 77, 85, 91

Low If Index 112, 114
Low VCI 112, 114
Low VPI 112, 114

M

MAC
Address 51, 58
Label 50
Button 79
Configuration 58
Count 58
MAC Address 51
Mac Cnx Entries 99
Main Pwr Bus 29
Master 62
Ports 58, 68
Max Cnx Entries 104
Max Stat Entries 100, 104
Max UPC Entries 100
Max VCCs 70
Max VPCs 70
Max VPI Bits 70
Maximum
Frame Size 56
MIB-II Applications 19
Miscellaneous Applications 19
Model
FDDI LAN 133
Model Information View 33, 52
Model Type Label 36, 47
Model Types 15
Modeling
Flexible Network Bus 134
Module 134
Modules 134
Quick Steps 133
Modify Allowed Station List
Button 79
Modifying the Threshold Settings 94
Module Identification Labels 36
Module View 21
Filter... 21
Search 21
Statistics 21
Monitor
Reject Count
Link Error 63
Monitor Count
Link Error 62

N

Neighbor
Notification Protocol 59
Upstream 60, 68
Neighbor Id 110
Network
Information 50, 51
Port 64
Security 64
No_Resource 67
Node Class 68
NoEnable 74
Non
Isolating Errors Table Button 84
Non Master Ports 58
Non-Op 60
Dup 60
NoOperation 74
NotRemovable 90
Number of ANIMS 100
Number of Ifs 108
Number of Interfaces 56
Number of Queues 110

O

OBS
Present 59
Open 74
Status 74
Oper Status 56, 99, 103, 106, 107, 108
Oper Time 99, 103, 106, 107
Operation Status 57
Optical Bypass Switch 59
Out of Window Collisions 67
Overflow Dropped Cell Count 111
Overview
SmartSwitch 9000 Series 7

P

Packets
  Giant 67
  Runt 67
Paste 132
Path
  Current MAC 58
Peak Level 117
Performance View 33
Physical 79
Physical Address 56
Physical Device View 30
Policing Support 100
Port 80
  Action 62
  Configuration 74
    View 57
  Count 64
  Management 62
  Notes 46
  Security
    Network 64
  State 62
  Type 62
Port Configuration
  FDDI 44
  Token Ring Port 46
Port Configuration - CSIIf Port 57
Port Configuration View 62
Port Label 45
Port Number Label 42, 44
Port Status Label 42, 44, 45
Port Type Label 50, 51
Ports
  Master 58, 68
  Network 64
  Non Master 58
  On 64
  Operational 64
Power Subsystem 28
Protocol
  Neighbor Notification 59

Q

Queue Index 117

R

Read Button 93, 97
Reading Thresholds from a Station 94
Receive Congestion 90
Received 72
Red 46
Redundancy 28
Remove 90
  Station Button 81, 84, 86, 89
Repeater
  Configuration
    View 64
  Management 64
Repeater Labels 42
Reset 106
Restricted Rights Notice 2
Ring
  Alarm 77
  Configuration 76
    Button 73, 76
  Name 73, 76, 78, 80, 82, 85, 87
  Number 73, 76, 78, 80, 82, 85, 87
  Operational 60
  Port ON Out Of 74
  Purges 77
  Security Button 73
  Speed 73, 76, 78, 80, 82, 85, 87
  State 58, 77
  Status 73, 76, 78, 80, 82, 85, 87
  Threshold 77
  Timebase 77
  Topology 68
Ring Identification Label 44
Ring Speed 45
Ring Speed Label 45
Ring States
  FDDI 60
RingIn/Ring Out and Ring Status Labels 46
Ring-Op
  Dup 60
RingView 133
RM Threshold 116
Run Time 29

Runts 67
Rx Cell Count 111
Rx Cells 109
Rx Cnx Lookup Invalid Errors 111
Rx Errors 111

S

Security
Network Port 64
Security Administration State 95
Segmentation Traps 65
Select Model Type dialog box 132
Set Filter Button 79
SFCS MIB Rev 103
SFCS MIB Version 103
Sig Stack Id 110
Size 116
Slave 62
Slot Dependencies for the 7C03 15
Slot Index 103, 105, 106, 107
Slot Number Label 36
SmartCell Switches 14
SmartSwitch 9000 Series
Overview 7
SMB 1 and SMB 10 Icons 47
SMB 1/SMB 10 25
SMT
Information 59
Version 59
SoftwareReset 74
Sort
Down
Button 79
Up
Button 79
Source
Address
Traps 65
Error 67
Source Address
Management 65
Spanning Tree
Information 42
Special Database 42
SPECTRUM View Access 34
Stat Entries 101
Stat Table Size 100, 104
State 92
Static Database Table 42
Station 68, 80, 92
Address 80, 82, 85, 87, 90
Alarms
Button 81, 84, 86, 89
Dialog Box 92
Configuration View 58
Detail
Button 81, 84, 86, 88
Errors 82
Management 59
Name 80, 82, 85, 87, 90
Port 90
ON Out Of 74
Priority 90
Removal 90, 92
Station Detail View 46
Stats Enable 113
Stats Entries 105
Stats Table Counter Size 113
Status 28, 29
Administrative 50
Adminstrative 50
Switch Capacity 103
Switch Host Port 103

T

Target Token Rotation Time 59
Tasks 35
TDM Cell Count 101, 105
TDM Utilization 101, 105
Temp 28
Threshold 92
Broadcast 66
Collision 66
Error 66
Traffic 66
Thru 61
Time
Target Token Rotation 59
Valid Transmission 59
Timebase 66
T-Neg 59
T-Notify 59

Token 85, 91
Errors 77
Ring
Security Configuration
View 78
Station
Alarm Thresholds
View 82
Detail View 90
Non-Isolating Errors
View 85
Table View 80
Rotation Time
Target 59
Token Ring Label 44
Change Ring Speed 45
Configuration 45
Model Information 45
Station Errors 45
Stations 45
Token Ring Port Labels 45
Token Ring SmartSwitch Module 13
Topology View 130
Total 28, 72
Allowed Stations 78
Totals Button 81, 83, 86
TR MicroLAN Switch Modules 13
TR Ring Configuration View 73, 76
Trace 60
Trademarks 2
Traffic
Alarms 66
Threshold 66
Transmitted 72
Transparent Bridge
Info 42
Trap
Configuration 65
Traps
Link 65
Segmentation 65
Source Address 65
T-Req 59
TTRT 59
TVX 59
Tx Cell Count 111
Tx Cells 109, 117
Tx Cells Discarded 117
Tx Cells Dropped 117
Tx Table Size 100
Type 56, 110, 112
Type of Switch 100

U

Un-Sort
Button 79
UPC Enable 113
UPC Entries 101, 105
Update
Button 79, 80, 81, 83, 85, 86, 88
UPS/Battery 29
Upstream 90
Upstream Neighbor 60, 68
Used 28

V

Valid Transmission Time 59
View
Application 136
FDDI LAN Topology 130, 133, 136
Lost & Found 132
Room Location 132
Topology 130
VPI Lookup Invalid Errors 111

W

worksheet 129
Wrap
A 61
AB 61
B 61
S 61
Wrapped (WRP) 46

Y

Yellow 46